

30 BEST SHAREWARE PACKAGES • FREE PULLOUT! MICROSOFT WORD

PCWORLD

INCORPORATING PC RESOURCE

OCTOBER 1990 INTERNATIONAL EDITION \$2.50 UK £2.25

The 180 Best Products of 1990

World Class Awards—
The Readers' Choice



PLUS

The Best Mail-Order Company

The Best Service and Support—Hardware and Software

TANDY'S PS/1 KILLER!



INCORPORATING
PC Resource
AN IDGC/PETERBOROUGH PUBLICATION



Monitors Look to the Future

displays of NEC's new
D and 5D monitors por-

MultiSync 5D offers similar

NEC MultiSync 3D



PROS: Supports all boards, "remembers" screen adjustments, 28mm dot pitch

MultiSync 2A, MultiSync 3D

**"Works
Better!"**

"Looks Great!"

The Bottom Line

The MultiSync Graphics Engine has the power to put Windows or PM into the mainstream.

Overall, the NEC MultiSync Graphics Engine is powerful, versatile, and fast—it is a perfect match either for an NEC monitor or for the high-resolution monitor of your choosing.

I'd take the crisp NEC over the fuzzy IBM image any day.

been said.

If you want a monitor for VGA level and up, the NEC MultiSync 4D is an excellent choice.

Buyers of NEC's MultiSync 2A

awarded that monitor the highest scores in the four top-ranked attributes—it

approach to storing settings is
reme.



FINALISTS
NEC MultiSync 3D, 4D, and 5D monitors

■ Jerry Benson, Tom Grau, Wayne Hinson, Keith Schaefer
■ NEC Home Electronics (U.S.A.) Inc., 1255 Michael Dr., Wood Dale, IL 60191; (312) 860-9500

NEC got out in front first with the MultiSync—and stayed there. The 3D, 4D, and 5D monitors are significant additions to the MultiSync family. They add digital controls and automatic recall of user preferences for each video mode to a product line that's already won the Award for Technical Excellence and numerous Editor's Choices. The 4D monitor takes multiscanning into a new dimension: the 16-inch tube may prove to be the perfect size for high-resolution color work in cramped offices.

... porch, and sync timings).

PC FACT FILE
EDITOR'S CHOICE

NEC MultiSync Graphics Engine
NEC Technologies Inc., 1255 Michael Dr., Wood
 Dale, IL 60191; (708) 860-9500.

List Price: \$1,999.

In Short: A coprocessor board with built-in VGA abilities that's programmable to accept a wide variety of monitors. Easily installed and accompanied by copious documentation, this is an excellent buy for any application.

CIRCLE 610 ON READER SERVICE CARD

APRIL 10, 1990 PC MAGAZINE 163

accelerator software to dramatically boost the speed of Windows and Presentation Manager applications, 222 to

NEC M

The superb
MultiSync 41

The Bottom Line

Bottom line If you use high-resolution graphics and windowing environments, NEC's monitors won't disappoint.

The user-friendly Swiss army knife of multiscanning monitors, the NEC Multisync 3D displays bright, true colors and very sharp text and graphics. All controls are conveniently mounted up front, including micro-processor controlled push buttons for manually adjusting screen size. The

Bearing this in mind, our top pick of the products reviewed here is the NEC Multisync GS2A. It has an optional higher resolution than the rest, and the NEC's large, flat screen enhanced viewing with superior glare protection. The higher resolution means it

Seldom does a company dominate a market the way that NEC does with multiscanning monitors, and its latest innovations show why.

That hasn't

The Multisync 3D, which includes a 9-pin and 15-pin video cable, is the best of the multiscanning monitors we tested.

PC FACT FILE
EDITOR'S CHOICE



NEC MultiSync 4D

NEC Technologies Inc., 1255 Michael Dr., Wood Dale, IL 60191; (708) 860-0335.

List Price: \$1,699 (cable included)

Requires: VGA, Super VGA, 8514/A, or 1,024 x 768 graphics adapter.

Diagonal Screen Size: 16 in.

In Short: The 16-inch NEC MultiSync 4D is the lowest-priced monitor in the MultiSync line to support 1,024-by-768 noninterlaced resolution. It can store settings in its digital memory.

CIRCLE 424 ON READER SERVICE CARD



By moving graphics screens at a blistering pace, the Graphics Engine brings improved performance to desktop publishing, CAD, and other graphics applications and

A BEST-TO-SELL WINNER
MONITOR:
NECHE MULTISYNC 2A

With high-performance monitors, quality and reliability may be more important than price. And with so many graphics standards out there, software compatibility is a big issue. The MultiSync 2A 14-inch color monitor from NEC Home Electronics (U.S.A.) delivers on all counts. 

The 4D's approach
elegant in the extr

There's really nothing to say about our monitors.

*The
MultiSync
2A*



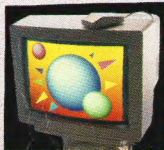
*The
MultiSync
GS2A*



*The
MultiSync
3D*



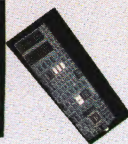
*The
MultiSync
4D*



*The
MultiSync
5D*



*The
MultiSync
Graphics
Engine
Board*



NEC

Circle 187 on reader service card

PC WORLD

PREVIEWS

- 105 **Paradox Muscles Up** *Eric Brown*
The latest *Paradox* is fast—and it comes with SQL connections and developers' tools that boost its standing as a powerhouse corporate data manager.
- 109 **A New Kind of Home PC** *Richard Landry*
Tandy's 1000 RL shines where IBM's PS/1 falls flat: It offers an unimposing interface anyone can learn, plus a generous bundle of home-style applications.

REVIEWS

- 136 **Laptops With the Light Stuff** *Michael Goodwin*
For our money, a laptop can't be too light or too thin. Fortunately, the Best Buys in notebook PCs don't trade power for portability.
- 146 **Floppy Drives—Love 'Em and Leave 'Em**
An outboard floppy is there when you need it but lets you travel light.
- 151 **Four SQL Data Bases: Mainframe Muscle in a PC Package**
Tyler Band
If you have the programmers and the patience, SQL data base servers deliver big-system performance at a fraction of mainframe and mini prices.
- 160 **Uncomplicating SQL: Easy Front Ends Are the Puzzle's Final Piece**
PC data base tools and spreadsheet links put a friendly face on big SQL jobs.
- 164 **Data Base Alternatives: Client-Server Computing Without OS/2**
Powerful data base servers come in NetWare and DOS versions, too.
- 171 **Printer Power: NetWare Pop-Up Utilities** *David M. Syme*
These third-party utilities go NetWare one better, with peer-to-peer printer sharing and total printer control from within your applications.
- 175 **Print Server: NetWare 286 Provides Peer-to-Peer Printer Sharing at Last**
Novell's Print Server is rich in features, but it's still not memory resident.
- 178 **Network Printing Basics: How NetWare Minds PCs and Queues**
A simplified look at the ins and outs of printing on a Novell network.



Cover story: "And the 1990 World Class Award goes to..." PC World readers pick the top products in 37 categories, page 188.

Cover photograph by
Fred Stimson

NEWS

- 15 **Top of the News**
Mike Hogan
Late-breaking news you can use.
- 93 **Industry Outlook**
Edited by Eric Bender
 - *Harvard Graphics* is under fire from hot new *Windows* entries
 - The rise of low-cost lasers has cut into sales of dot matrix printers
 - Fax boards are affordable and they work—so why don't they sell?
 - Ashton-Tate puts all its chips on the line with *dBASE IV 1.1*

- 113 **Product Outlook**
Edited by Mike Hogan
 - Adobe's cartridge puts honest-to-goodness PostScript in a LaserJet
 - Translate word processing and graphics files fast with *AutoWord*
 - A color printer on a B&W budget? Epson's LQ-860 fills the bill
 - AST's upgradable ISA system and NCR's powerful Micro Channel box show off the power of the 486
 - QMS's PS 410 reads incoming jobs and switches effortlessly between modes
 - Connect to the leading SQL data servers with *DataEase SQL*
 - Sharp unveils a lightweight laptop and a luggable SX-based portable
 - OCR gets easier with two releases of *ReadRight*

- A *DrawPerfect* upgrade lets you distribute run-time slide shows
- One Token-Ring card—DCA's IRMATrac—fits ISA and Micro Channel slots
- Toshiba adds a docking station to its laptop line
- Run *Windows* apps under *Desqview*? Quarterdeck says you can
- Plus updates on *R:base*, *Charisma*, *Wingz*, *The Norton Backup*, and many more...

DEPARTMENTS

- 11 **In This Issue**
30,196 reasons why this year's contest was a world-class event.

C O N T E N T S

F E A T U R E S

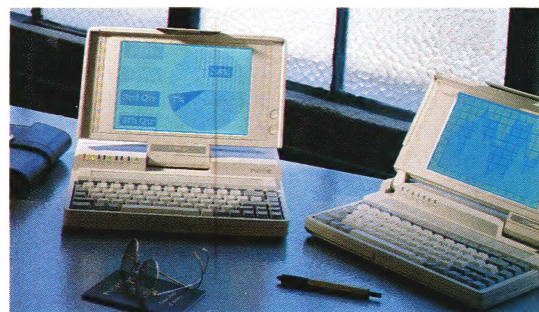
- 188 **The Readers' Choice: 1990 World Class Awards** *Daniel Tynan*
Old favorites and more than a few newcomers made this year's honor roll of the best hardware and software in the world.
- 208 **Who Pays for Tech Support?** *Roberta Furger*
Leading vendors want you to know that first-rate service and support doesn't come cheap. Are the days of affordable support gone forever?
- 212 **WordPerfect Sets a Lofty (and Costly) Standard for Service**
Free support and monster phone bills are a source of pride at WordPerfect.
- 215 **Can You Depend on Your Dealer for Technical Support?**
Even vendors concede there's no guarantee of a consistent level of service.
- 218 **Buyers' Guide: The Best of Shareware 1990** *Steve Bass*
Some of the best software around doesn't come in a shrink-wrapped package. Here are the top guns in shareware, courtesy of 70,000 user group members.

H O W T O

- 227 **Painless Programming With BASICA** *Marty Franz*
DOS batch files can't do everything, but BASICA can fill in some of the gaps.
- 241 **Words Into Print** *George Campbell*
Custom dictionaries teach *WordPerfect* to speak your professional dialect.
- 247 **Spreadsheets (A..Z)** *Richard Scoville*
Well-crafted criteria help you get the most out of 1-2-3 data bases.
- 253 **Data Basics** *Alan Schwartz*
For swifter sorts and faster finds, use *dBASE* indexes—here's how.
- 259 **Art of Persuasion** *Richard Jantz*
Which font is right for your documents? Eight steps to great type.
- 265 **The Information Edge** *Judy Heim*
Top-dollar intelligence via NewsNet, plus stock analysis from MetaStock.
- 271 **User Group Tips**
Hands-on advice from users across the nation.
- 281 **Instant Reference Card**
An indispensable desktop reference for *Word* users.



Power users may be underwhelmed, but Tandy's 1000 RL should be a big hit with people who are mystified by PCs, page 109.



They may be tiny, but they're not toys. Notebook PCs put desktop performance in your carry-on bag, page 136.

- 21 **Richard Landry**
Justice is hard to come by on the electronic frontier.
- 27 **Letters**
Praise for *PC World's* Special Software Issue.
- 41 **The Help Screen**
Karl Koessel
Windows 3.0 setup, DOS wild cards, and step-by-step instructions for swapping printer ports.
- 50 **Network Q&A**
How to build high-speed links between remote networks.

- 69 **Consumer Watch**
Roberta Furger
Tech support alternatives: on-line help, user groups, and more.
- 70 **Rate Your Satisfaction**
Who's buying which word processor.
- 277 **Star-Dot-Star**
Edited by Tom Swan
Easy editing macros for *WordPerfect* and 1-2-3.
- 278 **Developer's Toolbox**
CodeRunner takes the anxiety out of TSR programming.

- 338 **Taking It Home**
Lawrence J. Magid
Your work-at-home system isn't complete without a modem.

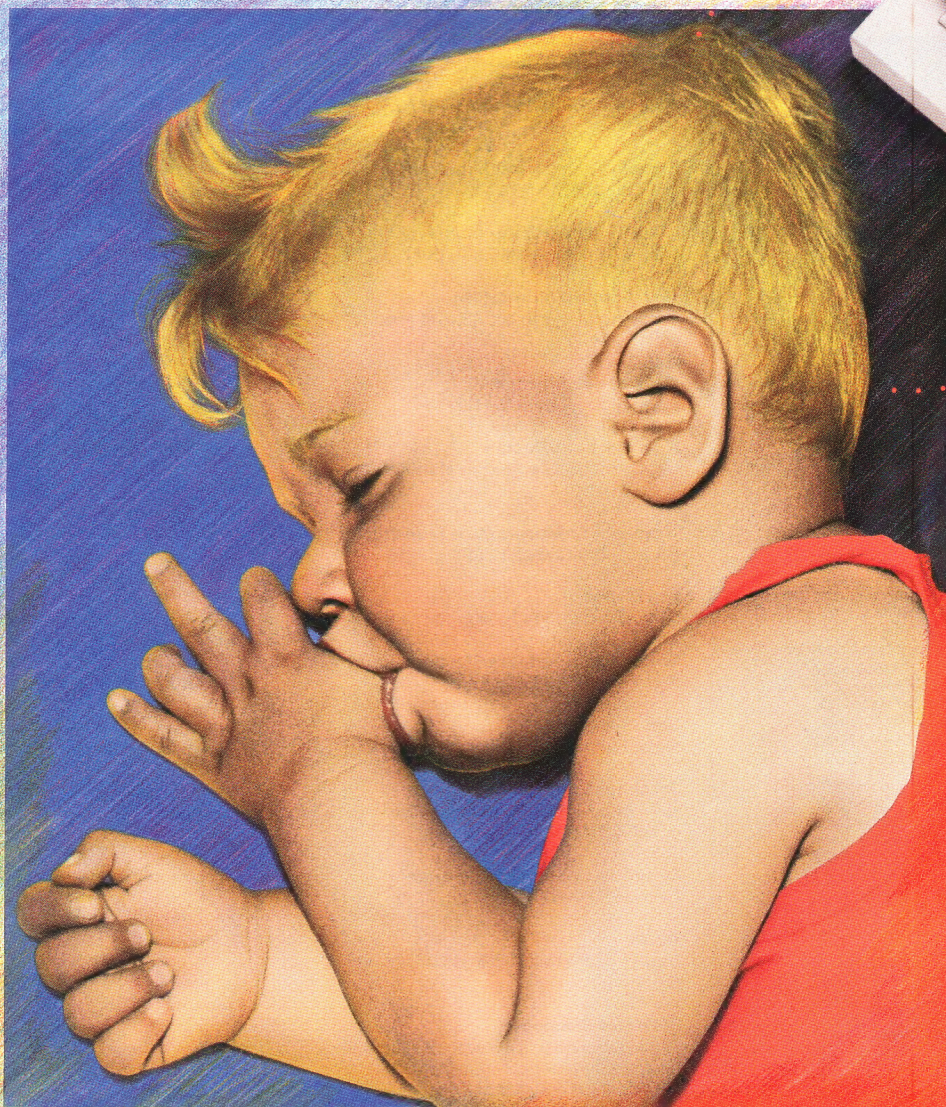
I N F O R M A T I O N

- 286 **PC World Catalog**
A convenient buying guide to PC products and services.
- 305 **Advertiser Index**
- 307 **Products Featured in Editorial**
- 309 **PC World Mail-Order Shopping Guide**

PC World™ (ISSN 0737-8393) is published monthly at \$29.90 for one year (12 issues), \$59.80 for two years (24 issues), \$89.70 for three years (36 issues) by PC World Communications, Inc., 501 Second St., #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for Canada and Mexico; add \$25 per year for surface mail or \$110 per year for airmail for all other countries. Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to **PC World**, Subscription Dept., P.O. Box 9509, Boulder, CO 80323-0259. Editorial and business offices: 501 Second St., #600, San Francisco, CA 94107, 415-243-0500; CompuServe 74055.412; MCI Mail PCWORLD/179-3813. **PC World™** is an independent journal, not affiliated in any way with International Business Machines Corporation. IBM is a registered trademark of International Business Machines Corp. Copyright © 1990, PC World Communications, Inc. All rights reserved. The following are trademarks of PC World Communications, Inc.: Consumer Watch, PC World View, **, PC World.

Consumer Watch. Think you've gotten a raw deal? Send the details to *Consumer Watch* at the address given above. We'll investigate your complaint; letters with the broadest interest will be published.

YOU ALWAYS KNEW THERE WAS SOMETHING SPECIAL ABOUT YOUR THUMB.



You have a lot of power in your thumb. So we designed TrackMan™ — the world's most popular stationary mouse — to put that power to work. **T**rackMan's brilliant ergonomic design includes a lightweight, thumb-driven ball, three buttons at your fingertips and room to rest your hand. It is far more comfortable than any other stationary mouse. Because the thumb is far more agile and powerful than any finger. **W**ith TrackMan's adjustable resolution,

you command the cursor with exhilarating speed and precision, even in the most confining workspace. **A**nd you get all this for only \$139, including Logitech's™ life-



time hardware warranty. TrackMan works with any application on an IBM® PC (or compatible). **F**or more information call Logitech's Customer Sales Center: (800) 231-7717 ext. 367. In California: (800) 552-8885; in Canada: (800) 283-7717; in Europe: ++41- 21-869-9656.

Tools That Power The Desktop.

Circle 2 on reader service card

®/TM: trademarks of registered owners





With features unmatched in the market like IBM PC, XT, AT, 286, 386, 486, Bus, 8 bit slot ISA compatibility. Host I/O memory mapped with no system memory used, no consumed interrupt, no drivers and using no TSR. Add to all of the above a power-down rate of from 5 to 20 per day and safety features that include Internal Ram Test, Protections for Thermal, Power Fuse, Battery-Low and Battery Fuse, and you've got yourself one superior IPS.

Patents Pending

1 (800) 637-2797

Distributor inquiries welcomed.



12231 SW 129th Ct., Miami, FL 33186
Yes please send me _____ IPS(s).
 Plus Shipping and Handling charges.
☐ Check or money order enclosed. ☐ C.O.D.
 Name _____
 Address _____
 City/State _____ Zip _____
 Telephone _____

See us at
COMDEX/Fall '90
November 12-16, 1990 Las Vegas, Nevada

INFO '90
October 10-12, 1990
Jacob K. Javits
Convention Center of New York

PC World is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes more than 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publications each month. International Data Group's publications include: **ARGENTINA's** Computerworld Argentina; **ASIA's** Asian Computerworld; **AUSTRALIA's** Australian Macworld, Australian PC World, Computerworld Australia; **AUSTRIA's** Computerwelt Österreich; **BRAZIL's** DataNews, PC Mundo; **CANADA's** ComputerData; **CHILE's** Computación Personal, Informática; **COLOMBIA's** Computerworld Colombia; **DENMARK's** CAD/CAM World, Computerworld Danmark, Macworld Danmark, PC World Danmark, Unix World; **FINLAND's** Mikro PC, Tietoviikko; **FRANCE's** Distributique, Info PC, Le Monde Informatique, Télécoms International; **HUNGARY's** Computerworld SZT, Mikrovilág; **INDIA's** Computers & Communications; **ISRAEL's** People & Computers Weekly; **ITALY's** Computerworld Italia, PC World Italia; **JAPAN's** ComputerWorld Japan, InfoWorld, Publish; **KOREA's** Hi-Tech Information/Computerworld; **MEXICO's** Computerworld Mexico, PC Journal; **THE NETHERLANDS' Amiga** World, Computerworld Netherlands, PC World Benelux; **NEW ZEALAND's** Computerworld New Zealand, PC World New Zealand; **NIGERIA's** PC World Africa; **NORWAY's** Computerworld Norge, Macworld Norge, PC World Norge; **PEOPLE'S REPUBLIC OF CHINA's** China Computerworld, China Computerworld Monthly; **POLAND's** Computers; **SPAIN's** Amiga World, CIMWorld, Computerworld España, Comunicaciones World, PC World España; **SWEDEN's** Computer Sweden, Mac World, MikroDatorn, PC\Nyheterna, Svenska PC World; **SWITZERLAND's** Computerworld Schweiz; **TAIWAN's** Computerworld Taiwan, PC World Taiwan; **UNITED KINGDOM's** Graduate Computerworld, ICL Today, Lotus, Macworld, PC Business World; **UNITED STATES' AmigaWorld**, CIO, Computerworld, Digital NEWS, Federal Computer Week, GamePro, inCider/A+, Info World, International Custom Publishing, Macworld, Network World, PCGames, PC World, Portable Computing, Publish, Run, Sun Tech Journal; **USSR's** Manager, Network, PC Express, PC World USSR; **VENEZUELA's** Computerworld Venezuela, Micro Computerworld; **WEST GERMANY's** Amiga Welt, Computerwoche, Information Management, Macwelt, PC Welt, PC Woche.

Andrew Fluegelman, 1943–1985
Founding Editor

(800/435-7760 in California, 800/435-7766 outside California)

Rebecca S. Myers (415/978-3256)

The new look of power.

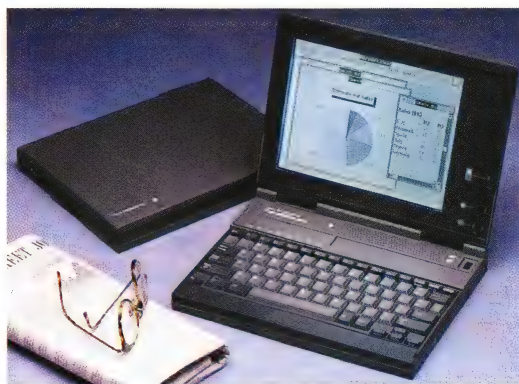


286 processing in a computer that's notebook size,
1.4" thin and 4.4 lbs. light.

Introducing the TI
TravelMate™ 2000
notebook computer —
from the company
that pioneered portable
computing solutions.

Since inventing the first portable data terminal in 1969, TI has led the way in packing more and more functionality into smaller and smaller products. Now TI brings you the next generation in portable computing — the TravelMate 2000.

This sleek, 4.4-lb. notebook computer gives you the power of a PC-AT® in an ultrathin 8½" x 11" package. It's designed to fit your workstyle — wherever you work — in the office, at home or on the road. Just slip it in your briefcase with your file folders, journals and other business materials, and you're ready to go.



Large VGA screen with leadership display technology.

You'll appreciate the technology behind the 10" diagonal VGA display. It's a remarkable feature for a computer that's notebook size. The high-resolution 640 x 480 supertwist screen easily handles demanding windowing and graphics applications.

More features to meet your application needs.

The TM 2000 has the power to run your favorite software — 12 MHz 80C286 processor, 20MB hard disk drive and 1MB of RAM. A built-in, rechargeable battery lets you work up to two hours. With an optional add-on battery, you can work up to five hours — enough for coast-to-coast flights.

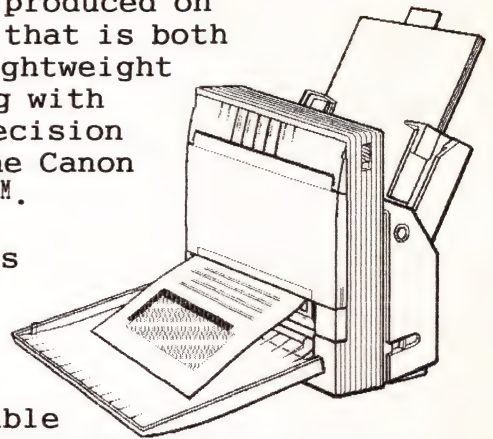
You also get a full-function AT enhanced keyboard, so you can work with the same feel of your desktop PC.

In addition, we've loaded MS-DOS® and LapLink™ in ROM, and preformatted the hard disk.

For more information call
1-800-527-3500.

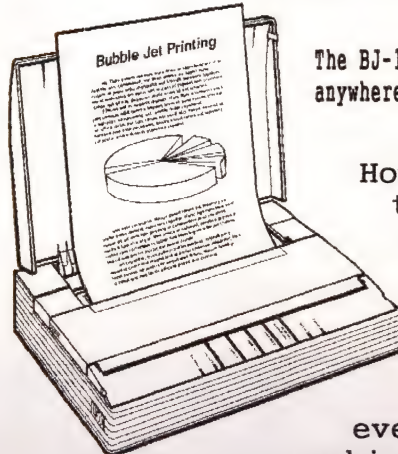

**TEXAS
INSTRUMENTS**

This document was produced on the first printer that is both a desktop and a lightweight portable, printing with letter quality precision on plain paper. The Canon BJ-10e Bubble Jet TM.



The BJ-10e with its optional 30-sheet feeder printing on a desk.

On a desk, with its optional 30-sheet paper feeder, it's an ideal personal printer. As a single-sheet portable with its optional rechargeable battery pack, it weighs a remarkable 4.6 pounds and prints on a variety of paper. The BJ-10e emulates the IBM^R ProprinterTM X24E, so you can use a wide range of applications software.



The BJ-10e printing a single sheet anywhere you want.

How fast is it? It printed this page on ordinary 8 1/2"x11" paper at 83 characters per second. It won't slow down when printing in bold or various type sizes either. It even handles complicated graphics, as you see in these scanned-in BJ-10e illustrations.

What's more, its blacks are intensely black and its ink dries instantly, so it never smears.

How quiet is it?
Quiet enough to be
used in the middle
of the night with
someone asleep a
few feet away.

And, you never have
to worry about
maintenance be-
cause it uses a pop-
in BJ cartridge
which contains the
print head and the
ink supply. Every
cartridge prints
approximately
700,000 characters
(HQ mode), making
it as economical to
use as it is to buy.

But best of all,
the BJ-10e works
everywhere you
could possibly
need it, fitting
neatly into a
briefcase with its
optional recharge-
able battery pack.

The Canon BJ-10e
Bubble Jet. What
other printers
print on a desk, it
prints anywhere.

Another page in printer history.



Canon BJ-10e
BUBBLE JET PRINTER
Working To Improve Your Image.™

For a history-making demonstration, visit your
Canon dealer or call 1 (800) 848-4123.

ACTUAL SIZE



The document displayed in the BJ-10e is actual output from Aldus®
PageMaker® software using the IBM Proprinter X24E printer driver.

Canon® is a registered trademark and Bubble Jet and BJ-10e are
trademarks of Canon Inc. IBM® is a registered trademark and
Proprinter is a trademark of International Business Machines Corp.
Aldus® and PageMaker® are registered trademarks of Aldus Corp.

Circle 49 on reader service card

TAKEOVER

REMOTE CONTROL SOFTWARE™

“... a fresh approach to remote computing.”

— PC Magazine, June 12, 1990

“TAKEOVER™ is a friendly program offering a powerful unattended control capability. One copy gives both remote and host capacities to two PCs. This combined communications and remote-control package offers users speed and simplicity.”

— PC Magazine, June 12, 1990



June 12, 1990
Takeover, Version 1.0

We think TAKEOVER is everything a remote control software product should be. *PC Magazine* agrees with us, which is why they awarded TAKEOVER the coveted “Editors’ Choice” award. TAKEOVER includes all the features of MIRROR III™, so you can perform either remote control or general communications. TAKEOVER also offers these and many other features:

- Easy-to-use dialing directory interface with pull-down menus and mouse support
- CGA, EGA, VGA, and Hercules video modes
- Background file transfers with complete error checking
- Password Security with automatic call back
- Wide array of file transfer protocols and terminal emulations
- PRISM™ script language that lets you automate your sessions
- 60-Day Money-back Guarantee
- Technical Support at no charge



TAKEOVER includes both the Guest and Host software on 5.25" and 3.5" disk formats and runs on IBM® or 100% compatibles running MS-DOS 2.0 or higher. TAKEOVER supports Hayes® compatible modems, or direct serial connections (COM 1 - 4) up to 57,600bps. Guest memory usage is 480K and Host memory usage is 55 - 70K, depending upon configuration.

To order, call: 1-800-634-8670



327 Office Plaza Drive
Suite 100
Tallahassee, FL 32301

Phone: (904) 878-8564
FAX: (904) 877-9763
BBS: (904) 878-9884

Full Spectrum Communications

TAKEOVER, MIRROR III, and PRISM are trademarks of SoftKlone. All other trademarks appearing here are the property of their respective owners.

Circle 236 on reader service card



Our World Class counting crew: Robert Luhn, Larry Wilson, Bill Segovia, and Daniel Tynan

There's nothing quite like the World Class Awards. Most of the time, computer users get to vote with their pocketbooks—period. Once a year, though, they get the chance to send a message directly to the industry, with *PC World* playing the middleman.

You'd think tallying the World Class contest results would be a piece of cake. Sift through a pile of postcards, jot down the totals on a legal pad, and start calling the winners, right? Well, not exactly.

Larry Wilson, whose Wilson Research Group counted the ballots for the eighth consecutive year, figures a few numbers might put the job in better perspective.

Start with several dozen mailbags containing a total of 30,196 ballots, he says. Figure that the typical respondent votes in 40 percent of the 37 categories, and you get a staggering total of nearly 450,000 individual opinions that have to be painstakingly recorded.

Now increase the complexity by at least a couple of orders of magnitude, because the free-form ballot gives respondents a nearly infinite range of choices. "In the Mass Storage and Desktop Computer categories alone," Wilson observes, "somewhere between 500 and 600 individual products got votes." Finally, toss in the challenge of deciphering thousands upon thousands of handwriting samples. Senior Editor Robert Luhn admits, "It's a detective job sometimes, trying to figure out what the voters really intended."

None of our World Class team members objected to sorting through the mountains of paper, though. There's something refreshing—and occasionally intriguing—about being this close to so many *PC World* readers.

ROBERT CARDIN

Person to Person

Assistant Research Manager Bill Segovia kept an eye on the postmarks as the trickle of incoming mail turned into a flood. "It's truly a world-class event," he maintains. "This year we got entries from places where you wouldn't expect to find PCs—much less *PC World* readers! We got letters from out-of-the-way places like Okinawa, Turkey, and Iran."

Assistant Editor Dan Tynan interviewed a random sampling of respondents for our feature coverage of the World Class contest results. "I was struck by two things," he reports, "first by the diversity of users, and then by the strength of their opinions. They have a fierce loyalty to their favorite software and hardware. Some people are that way about their cars, but computers inspire an almost fanatical level of enthusiasm."

Wilson's counting crew observed the same intensity of opinion, especially in the newly added Service-and-Support categories: "It was amazing how many people used the free-form comments section to rave about WordPerfect's support policies. I hope other vendors are paying attention—those votes might do some real good."

In addition to the mention in this month's feature, every winning company receives an engraved trophy to commemorate the occasion. Most often, a *PC World* editor makes the presentation to an audience that includes not just CEOs and marketing managers, but programmers, tech support personnel, and receptionists as well. That's the final link in the chain that extends from the PC consumer to the hundreds of people who make a World Class Award-winning product possible.

When we talk to this year's winners, we'll be sure to give them your regards. ☺

Ed Bott

Ed Bott
Managing Editor

33-MHz, 80386, What Else Can

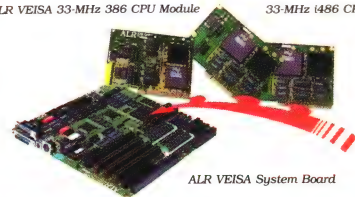


Just Upgrade the CPU!

ALR VEISA 25-MHz i486 CPU Module

ALR VEISA 33-MHz 386 CPU Module

33-MHz i486 CPU Module



ALR VEISA System Board

EISA... \$1995 We Say?



Introducing the ALR BusinessVEISA Model 101...

What else can we say about a deal that's this good? Well, maybe we could add that the ALR BusinessVEISA 386/33 Model 101 also lets you **"just upgrade the CPU™."** It's the only affordable upgrade path to 25- or 33-MHz i486™ processing, and beyond. And perhaps we should also mention that this system can accommodate up to 17-MB of memory right on the system board. And it probably wouldn't hurt to talk about the standard 1-MB of RAM, built-in IDE hard drive controller, optional cache module, standard 1.2-MB 5.25" floppy drive, standard serial and parallel ports, and ALR's limited one-year warranty.

But, quite honestly, none of those features are quite as impressive as this one. For just **\$1995**, you can purchase a **33-MHz 386™-based** PC with a **true 32-bit EISA bus** — to easily tackle today's power applications in business, desktop publishing, CAD/CAM, multiuser and networking. Who else makes a system that can match the BusinessVEISA 386/33 Model 101 in price, versatility, and performance? Nobody.



Call ALR today and we'll put you in touch with your closest ALR reseller:

ALR 1-800-444-4ALR
Advanced Logic Research, Inc. 9401 Jeronimo Irvine, CA 92718 (714) 581-6770
FAX: (714) 581-9240

ALR systems are available at these selected resellers:

**ALR Power Partner
Resellers**

Connecting Point 
COMPUTER CENTERS

ENTRE
COMPUTER CENTER

TCBC
TECHNICAL BUSINESS CENTER

Prices and configurations subject to change without notice. Prices based on U.S. Dollars. Shown with optional monitor and mouse. ALR is a registered trademark and BusinessVEISA is a trademark of Advanced Logic Research, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners. © 1990 by Advanced Logic Research, Inc. AST®, here's one more thing!

Circle 22 on reader service card



Only LANtastic's tiny RAM can make businesses this small link big.

To anyone who still believes that all big-capability PC networks demand big bucks, big hassles and big RAM, we'd like to offer a small suggestion:

The LANtastic™ PC Network.

You see, only LANtastic gives you full-featured networking at a price small businesses can afford—as little as \$249* per computer.

So that you can link as few as two PCs. And grow to hundreds of PCs. Without sacrificing capabilities or speed.

And only LANtastic uses the smallest RAM of any LAN—under 12K on a workstation and less than 40K on a server—yet still delivers sophisticated disk, file, program and printer sharing, plus security, E-mail, CD-ROM support, NetBIOS-compatibility and more.

And only LANtastic gives you a special windowed menu that will lead you by the hand through the set-up process. So you can be up and running before lunchtime.



No wonder only LANtastic was given a Best Buy, an Editors' Choice and an Award of Distinction by leading industry publications.

And no wonder our sales shot up 1000% last year making Artisoft the world's fast growing developer of LAN hardware and software.

LANtastic. The only smart way to get your small business linking big. Call 602-293-6363.



ARTISOFT
Revolutionizing Connectivity

Circle 18 on reader service card

*Manufacturer's suggested retail price on LANtastic 2Mbps adapters. © 1990 ARTISOFT. LANtastic is a trademark of ARTISOFT.

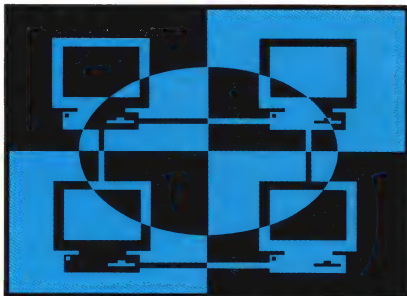
TOP OF THE NEWS

LAN MAN 2.0 APPEARS

Microsoft Ups Ante in Battle of the Networks

Microsoft has launched its most serious challenge ever to Novell with the release of new versions of its *LAN Manager* and *SQL Server* and the announcement of a \$21 million investment in networking over the next 12 months alone.

The software giant expects to authorize 600 *LAN Manager* and *SQL Server* resellers in the United States over the next year, and to back them up with 400 sales and support people. The company will reach out to customers by holding hundreds of networking seminars nationwide. The marketing bill alone will exceed \$16 million, while another



\$5 million will be spent to purchase technology, and an unspecified amount to create a 260-person R&D staff.

"It's a very serious challenge to a very serious competitor," says Senior Product Manager David Thatcher. Novell has only half of Microsoft's revenues, but it boasts an estimated 10,000 NetWare resellers, and all 2000 employees are focused on protecting the company's 65 percent-plus

share of PC network sales.

Microsoft claims that its "single-version" pricing on *LAN Manager 2.0* and *SQL Server 1.1* makes the former cheaper than NetWare, which offers different versions for different-sized servers. *SQL Server 1.1* improvements are minor, but the new *LAN Manager* gets a major speed boost—slowness was version 1.0's most serious shortcoming—that Thatcher claims makes it as fast as NetWare 386. Version 2.0 also adds enhanced security, backup, fault tolerance, network management, and other features that are either missing from some NetWare versions or cost extra.

Novell is vulnerable in some areas, agrees International Data Corporation analyst Lee Doyle, "but it will take a while to bake this particular cake." He expects Novell to remain the de facto standard for the next three to four years.

IBM SPINS OFF PRINTERS

Sharpens Challenge to Hewlett-Packard

IBM plans to sell the majority interest in its Information

Products subsidiary, which manufactures lasers and other peripherals and supplies. "IBM isn't getting out of this business," explains International Data Corporation researcher Angele Boyd; the move could make IBM a stronger rival to Hewlett-Packard and heighten the competition that's boosting laser printer price/performance ratios.

IBM's Information Products annually sells more than \$2 billion worth of typewriters, desktop and minicomputer printers, keyboards, and office supplies. By year-end IBM hopes to sell the majority interest in its U.S. operations to Clayton and Dubilier, a private investment firm specializing in leveraged buyouts. The move will let the computer giant focus on its core markets, while Information Products can reduce overhead and react more quickly to market shifts, executives explain. The subsidiary will start by trimming 1200 of its 6000 employees.

IBM will keep selling products under its logo through existing distribution channels and will retain effective control over key product development. Unlike most rivals, Information Products builds its own laser engines and now will be free to sell to IBM competitors. The company's year-old LaserPrinter line competes very well with HP LaserJets on price and features, BIS CAP International's Marc Boer says, but has not been pushed hard enough.

SYSTEM PRICES FALL

Portables, Desktop 386s Slip Most, SXs Hold On

Now that leading vendors have overcome their supply constraints and nearly everyone is piling onto the portables bandwagon, pricing on notebook and laptop PCs has hit the skids.

Parade leader Compaq chopped the suggested list price for its LTE/286 with 20MB hard drive from \$3999 to \$3499, while the price of Toshiba's comparable T1200-XE dropped \$800 to \$3199. Tandy started low, introducing its 1500HD at \$1999 (which is also the street price). Heavier 386SX-based laptops also are slimming down pricewise:

CompuAdd's 40MB-equipped 316SL debuted at \$2895.

The desktop picture is more complicated. IBM slashed price tags on several Model 60s and 80s, as did Compaq with the Deskpro 386/33, but these are being phased out. Compaq also cut pricing on Systempros by up to 18 percent and on Deskpro 486s by up to 14 percent. Smaller players are even more aggressive. Telling analysts that it will live with lower profit margins for a while, AST Research cut prices as much as 26 percent on 386 machines and 23 percent on 486s, but only 11 percent on SX models.

Prices are holding on other

vendors' fast-selling SX machines too. Tandy lopped \$1000 off all its middle- to high-end 386s in the past year but left its SX untouched. Analysts say that vendors would like to sell more SXs at lower prices, but that Intel, the SX's sole supplier, underestimated demand. "The 80386 DX, SX, and 486 are all on allocation," an Intel spokesperson admits. "The SX has the highest [unmet] demand."

Generally, street prices held up quite well this summer, notes John Murphy of Wohl Associates. Heavy dealer discounting remains the rule, but vendors are trying to maintain a price floor by adding features such as extra memory. For example, Zenith Data Systems bundles *Windows 3.0* and a mouse with its business machines.

VGA ADAPTERS REBORN

Cheap Chip Offers Huge Color Palette, No Jaggies



With IBM reportedly poised to unleash yet another expensive high-end graphics standard on PC users, a small technology firm has developed an alternative approach, offering a stunning enhancement to existing VGA adapters at a minimal cost. Edsun Laboratories' Continuous Edge Graphics (CEG) is a single chip that will enable both new and existing VGA boards to produce near-photolike im-

ages on standard VGA monitors. CEG will be built into VGA boards and systems arriving late this year or early in 1991—Monolithic's \$895 MicroPAQ among the first.

Vanilla VGA shows only 256 simultaneous colors, and this, rather than its 640-by-480-pixel resolution, is the largest barrier to achieving photolike quality. In contrast, the CEG chip theoretically can generate more than 740,000 colors through a unique way of juggling 8 bits of color informa-

tion. And you need not even add memory to the adapter. Moreover, CEG combines its boosted color capabilities with intelligent anti-aliasing techniques to remove "jaggies" from lines. There's a slight performance hit, but "the images are beautiful," enthuses Dataquest analyst Clyde Spencer.

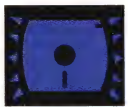
Edsun has allied with Analog Devices to offer CEG for \$15 in quantities of 100,000, a less-than-\$100 price premium

for CEG-equipped graphics boards. Edsun is writing device drivers for 1-2-3, AutoCAD, and Windows 3.0 and is working with software vendors to support other packages. With packages that don't support it, the CEG chip mimics standard VGA operation.

"CEG will extend the longevity of VGA as a viable standard," says Spencer, "and act as a barrier to the entry and success of higher-resolution products."

ARE 2.88MB FLOPPIES COMING?

Media and Disk Vendors Look for a Leader



Is there a 2.88MB floppy in your computer's future?

Disk drive and media industry insiders are sure IBM and others will introduce systems this year with 3½-inch drives that read and write this new data capacity along with 720K and 1.44MB. One source saw the drives being shipped to IBM.

Nearly every major media and drive maker has toolled up to produce all the market can use, reports Laurence Lueck, president of Magnetic Media Information Services. But then, he adds, suppliers have been ready since early this year, when they expected IBM to adopt the new standard. Instead of selling 20 million 2.88MB barium-ferrite floppies this year, they'll ship only 3 million—mostly to Japanese word processor makers like Toshiba, a leader in developing the technology. Competing standards include a 10.2MB format being pushed by Japanese system kingpin NEC. Without a champion like IBM, 2.88MB may never catch on,

says Lueck.

Others in the disk drive and media industries are sure it will, however, including Ed Kay, president of Practidisk, which makes 2.88MB replacement drives for the installed base of PCs. His sources assure him that IBM will introduce 2.88MB-equipped desktops this fall and that Toshiba will put them into its laptops. Gerald Korth, president of Memory Control Technology, which supplies floppy test equipment, says all Japanese systems makers are ready to go if IBM does. Vendors decline to reveal product plans.

Price is an issue, but a minor one. Korth estimates that a 2.88MB drive would add less than \$50 to system prices. An ANSI committee debate over standards created some delay, says Kay. There also are concerns over compatibility with prior and future versions of DOS, but Kay's firm solved those problems with a simple device driver. Sources close to Microsoft report that DOS 5.0 will support 2.88MB disks.



Multiple-processor PCs are spreading more slowly than expected,

but the move from Industry Standard Architecture to Extended ISA (EISA) buses is going so well that Compaq Computer is switching to EISA for all new products, including laptops.

When Compaq, the leading supplier of multiple-processor computers, introduced its dual-processor Systempro in November 1989, it anticipated the release of multiprocessor-capable network operating systems from Microsoft and Novell by March and June, respectively. But *LAN Manager 2.0* debuted in August without the promised capability to divide the Systempro's dual processors between application and network server duties.

Those extensions should arrive in the fourth quarter, says Gary Stimac, Compaq senior vice president of engineering. Compaq didn't want to hold up 2.0, he says, because the firm still enhances the Systempro with its support for intelligent drive arrays and the 32-bit I/O of EISA boards.

Meanwhile, a fault tolerance extension for Novell's

NetWare 386 that allows multiple Systempro servers to be hooked together won't appear until 1991. Multiprocessing is available under UNIX, but two-thirds of Systempros still go out as single-processor Novell file servers. Sales are brisk, insists Stimac, but it will be two to three years before either market demand or software support catches up to Compaq's original notion of a four-processor Systempro.

However, less than a year after introducing its first EISA bus on the Systempro, Compaq is finding the manufacturing cost advantages of the older ISA (or AT) bus disappearing. ISA still has sufficient data-carrying capacity to satisfy most PC tasks, says Stimac. But Compaq should soon be able to give its customers the added capabilities of EISA without charging extra, so it plans to ship the new bus when feasible on all new releases, including portables.

AST Research will still ship ISA but projects that its users will prefer EISA within a year. Dataquest analyst Robert Charlton expects EISA to overtake its longer-lived competitor, IBM's Micro Channel architecture, by 1993. ●

How to answer the needs of 386 users with just one line.

It's the COMPAQ line of high-performance



386
desktop
personal

computers. We designed each one with just the right balance of quality COMPAQ features and Intel 386 power. Giving you the perfect choice for every user, at every level.

Just turn the page for proof. We put extensive information about the entire line on a handy, removable reference chart. From the COMPAQ DESKPRO



386/33L to the COMPAQ DESKPRO 386N you'll find six levels of 386 performance designed to meet the wide range of your desktop computing needs. Each personal computer is built to be compatible with



the
industry-
standard

hardware and software you've invested in.

But why did Compaq create such a broad 386 desktop line? Because you told us to.

At Compaq, our first rule is to build computers that literally answer our users'

very latest needs. So we regularly seek out a variety of PC users like you. We ask questions, probe for input—even criticism.

We then combine all these ideas with our own innovative thinking and the best of the



latest PC
technology,
to create

products that deliver not just high performance, but the *right* combination of features for you.

That's how we started this line, when we introduced the industry's first 386-based PC. That's how we consistently break through to new levels of

PC performance. And most importantly, that's how we earned our sterling world-wide

reputation
for deliv-



ering the ultimate in power, compatibility and reliability. At every level.

Turn the page and see for yourself. Not only will you see the one 386 line that simply works better. You'll see which PCs in that line simply work better *for you*.



One line that simply works



Key Features and Options	COMPAQ DESKPRO 386N	COMPAQ DESKPRO 386s
Product Class	Low-profile desktop	Small desktop
The User	For the user who needs 386SX performance and requires specific network features	For the general business user considering 286 personal computers
Microprocessor Clock Speed	32-/16-bit 386SX 16-MHz	32-/16-bit 386SX 16-MHz
Coprocessors Supported	16-MHz 387SX	16-MHz 387SX
Expansion Slots Available Type	3 (2) 8-/16-bit ISA (1) high-speed memory	5 (4) 8-/16-bit ISA (1) high-speed memory
Standard Memory Maximum Memory	1 MB 16 MB	2 MB 13 MB
Storage Capabilities 3 1/2-inch Diskette Drive	1.44-MB standard	1.44-MB standard, second optional
5 1/4-inch Diskette Drives	1.2-MB optional	1.2-MB optional 360-Kbyte optional
Standard Fixed Disk Drives	40-MB	84-MB 40-MB
Optional Fixed Disk Drives	120-MB 60-MB 40-MB 20-MB	Fixed Disk Expansion Unit (Model 300) 320-MB** 84-MB 300-MB* 40-MB 110-MB 20-MB
*Fixed Disk Expansion Unit only. **Supported in Model 1 only.		
Maximum Storage Capacity	120 MB	1.2 GB
Tape Drives (Optional)	N/A	150-/250-MB, 80-/120-MB, or 60-MB
Operating Systems MS-DOS and MS OS/2 are available from Compaq	MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386	MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386
Display (Optional)	Video Graphics Color Video Graphics Monochrome	Advanced Graphics Color Video Graphics Color Video Graphics Monochrome
Video Controllers	Video Graphics (standard) 640 × 480 graphics 720 × 400 text 132-column text support	Video Graphics (standard) 640 × 480 graphics 720 × 400 text Advanced Graphics 1024 (optional) 1024 × 768 graphics 720 × 400 text
Keyboard	Enhanced Keyboard	Enhanced Keyboard
Dimensions	15.0" W × 14.9" D × 3.9" H (38.1cm W × 37.8cm D × 9.9cm H)	15.8" W × 14.8" D × 5.9" H (40.1cm W × 37.5cm D × 14.9cm H)
Additional Options	‡U.S. and Canada. 2400-Baud Internal Modem‡	2400-Baud Internal Modem‡

COMPAQ, DESKPRO, SYSTEMPRO, Registered U.S. Patent and Trademark Office. Product names mentioned herein may be trademarks and/or registered trademarks of other companies. ©1990 Compaq Computer Corporation. All rights reserved.

better for all 386 users.



COMPAQ DESKPRO 386s/20	COMPAQ DESKPRO 386/20e	COMPAQ DESKPRO 386/25e	COMPAQ DESKPRO 386/33L
Small desktop	Small desktop	Small desktop	Fully expandable desktop
For the general business user who requires more performance and features in a mainstream 386SX personal computer	For the advanced productivity user who needs the right combination of performance and features	For the experienced user who needs superior capabilities and power	For the performance-sensitive user requiring the ultimate in 386 performance and expandability
32-/16-bit 386SX 20-MHz with 4K Cache	32-bit 386 20-MHz with 32K Cache	32-bit 386 25-MHz with 32K Cache	32-bit 386 33-MHz with 64K Cache
20-MHz 387SX	20-MHz 387 or Weitek 3167	25-MHz 387 or Weitek 3167	33-MHz 387 and 33-MHz Weitek 3167
4 (4) 8-/16-bit ISA	5 (4) 8-/16-bit ISA (1) 32-bit memory	5 (4) 8-/16-bit ISA (1) 32-bit memory	7-8 (7) 8-/16-/32-bit EISA (1) 32-bit memory
2 MB 16 MB	4 MB 16 MB	4 MB 16 MB	4 MB 100 MB
1.44-MB standard, second optional	1.44-MB standard, second optional	1.44-MB standard, second optional	1.44-MB standard, second optional
1.2-MB optional 360-Kbyte optional	1.2-MB optional 360-Kbyte optional	1.2-MB optional 360-Kbyte optional	1.2-MB optional 360-Kbyte optional
120-MB 60-MB	110-MB 40-MB	120-MB 60-MB	650-MB 320-MB 120-MB
Fixed Disk Expansion Unit (Model 650 & 300) 650-MB* 120-MB 300-MB* 60-MB 210-MB 40-MB	Fixed Disk Expansion Unit (Model 300) 320-MB** 84-MB 300-MB* 40-MB 110-MB 20-MB	Fixed Disk Expansion Unit (Model 300) 320-MB** 84-MB 300-MB* 60-MB 120-MB 40-MB 110-MB	Fixed Disk Expansion Unit (Model 650 & 300) 650-MB 210-MB 320-MB 120-MB 300-MB* 420-MB Drive Array Pair 240-MB Drive Array Pair
2.6 GB	1.2 GB	1.2 GB	2.6 GB
150-/250-MB, 80-/120-MB or 60-MB	150-/250-MB, 80-/120-MB or 60-MB	150-/250-MB, 80-/120-MB or 60-MB	320-/525-MB, 150-/250-MB or 80-/120-MB
MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386	MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386	MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386	MS-DOS, MS OS/2, Novell NetWare, Microsoft LAN Manager, Banyan VINES, SCO UNIX/386
Advanced Graphics Color Video Graphics Color Video Graphics Monochrome	Advanced Graphics Color Video Graphics Color Video Graphics Monochrome	Advanced Graphics Color Video Graphics Color Video Graphics Monochrome	Advanced Graphics Color Video Graphics Color Video Graphics Monochrome
Video Graphics (standard) 640 × 480 graphics 720 × 400 text 132-column text support Advanced Graphics 1024 (optional) 1024 × 768 graphics 720 × 400 text	Video Graphics (standard) 640 × 480 graphics 720 × 400 text Advanced Graphics 1024 (optional) 1024 × 768 graphics 720 × 400 text	Video Graphics (standard) 640 × 480 graphics 720 × 400 text Advanced Graphics 1024 (optional) 1024 × 768 graphics 720 × 400 text	Video Graphics (standard) 640 × 480 graphics 720 × 400 text 132-column text support Advanced Graphics 1024 (optional) 1024 × 768 graphics 720 × 400 text
Enhanced Keyboard	Enhanced Keyboard	Enhanced Keyboard	Enhanced Keyboard
15.8"W × 14.8"D × 5.9"H (40.1cmW × 37.5cmD × 14.9cmH)	15.8"W × 14.8"D × 5.9"H (40.1cmW × 37.5cmD × 14.9cmH)	15.8"W × 14.8"D × 5.9"H (40.1cmW × 37.5cmD × 14.9cmH)	19.2"W × 17.7"D × 6.5"H (48.8cmW × 45.0cmD × 16.6cmH)
2400-Baud Internal Modem†	2400-Baud Internal Modem†	2400-Baud Internal Modem†	2400-Baud Internal Modem†

The right desktop for every desk top.

What kind of system do you need? A sophisticated technical workstation? A powerful server supporting multiple nodes? General business PCs? A combination of all three?

Take your pick. COMPAQ 386 PCs have you covered, whatever your needs. Because we developed the line to meet different users' power and expandability requirements.

Choose our fully expandable desktops

Now, for the real thing.

You've seen our line of 386 desktops on paper. You've seen how the right combination of power and features, along with compatibility and reliability, makes it the best platform for your high-performance solution. Now, you're ready to see it in person.

Which is something you can do right in your area through our worldwide network of Authorized COMPAQ Computer Dealers. Our dealers are trained to be experts at

USER TYPES	TYPICAL APPLICATIONS	PERFORMANCE/EXPANSION REQUIREMENTS	PRODUCT
Specialized/Power	CAD/CAE Scientific Analysis Software Development Customized LAN File Server	Higher 386 Performance Maximum Desktop Expansion	COMPAQ DESKPRO 386/33L
Advanced Productivity	Financial Analysis Database Presentation Graphics Small LAN File Server	DX (32-bit) Performance Moderate Expansion	COMPAQ DESKPRO 386/25e COMPAQ DESKPRO 386/20e
Mainstream Productivity	Word Processing Spreadsheets Database Stand-alone or Networked PCs	Moderate Performance Specific Network Features Minimum Expansion	COMPAQ DESKPRO 386s/20 COMPAQ DESKPRO 386s COMPAQ DESKPRO 386N

for specialized power users. They support features like Intel and Weitek coprocessors, lightning-fast fixed disk drive arrays and storage expandability up to an incredible 2.6 gigabytes. And the COMPAQ DESKPRO 386/33L can even be upgraded to 486 power.

Our small desktops offer multiple levels of power to cover a broad range of users' needs. And our new low-profile desktop provides basic 386 power for stand-alone or networked environments.

combining COMPAQ platforms with products from the leading software and hardware companies. To build the best overall COMPAQ-based solution to meet your specific needs.

Call now to find the dealer nearest you. In the U.S., 1-800-231-0900, Operator 135. In Canada, 1-800-263-5868, Operator 135.

COMPAQ

It simply works better.



Frontier Justice

It's legal—but is it just? Copyright law meets user interests on the electronic frontier.

Somewhere between your keyboard and computer screen lies a region where personal freedom bumps heads with courtroom justice. It's the frontier of software design, and it's attracting the attention of PC programmers, who worry that copyright rulings and user-interface patents might cramp their freedom to create new products that could benefit us all. And just as in the frontier days of old, these electronic pioneers find themselves facing powerful money interests and even the U.S. government itself.

Don't Fence Me In

There's no doubt that software developers' freedom to adapt and improve on the work of other programmers is being hemmed in by a mounting pile of copyright laws and software patents. Lotus's recent courtroom victory against Paperback Software effectively buried the once-popular notion that only a program's actual code was copyrightable, not its look and feel. Likewise, in the last few years, the government has reportedly issued more than 2000 software patents, some of which cover trivial details like how a cursor displays on a screen or how a dialog box works.

Programmer reaction to these developments ranges from polite concern to

downright horror. At a recent computer-science conference, a poll revealed that over 80 percent of attendees supported neither copyright nor patent protection of their software's look and feel. And a group called the League for Programming Freedom has picketed Lotus headquarters twice recently, demanding that the company call a halt to legal efforts aimed at protecting its ownership of the 1-2-3 interface.

According to the league's founder, MacArthur Fellow Richard Stallman, software copyrights and patents will eventually make it impossible for small-time, independent developers to bring out new products, since they'd have to conduct expensive legal searches to ensure their products didn't infringe on any patents or copyrights. Shareware would be another casualty, says Stallman, largely because patent holders wouldn't be likely to grant licenses to developers who couldn't ensure payment for each and every copy of software in the hands of users.

Too Busy to Fight

But what happens when developers don't—or can't—use the law to protect their proprietary interest in a user-interface design? I recently posed that question to Fred Gibbons, president and CEO of Software Publishing Corporation. SPC is a fast-growing, \$140 million company with a slew of hits like *Harvard Graphics*, *First Choice*, and *Professional File*; the company pioneered

the distinctive user interface that made its *PFS* family of products a hit with novice computer users.

In 1985, though, SPC was a struggling, \$37 million software firm facing a downturn in the software market and a new competitive threat from Symantec's *Q&A*, an easy-to-use data base that adapted and improved on the characteristic SPC interface.

"After *Q&A* came out, I immediately started getting calls from dealers asking me what I was going to do about it," Gibbons recalls. "We had just spent six months doing test panels and focus groups identifying the best design for menus—20 man-months of effort in all. Details like the menu names and screen placement were critical to the intuitiveness we were striving for, and it was agony for me to see someone take advantage of our investment. But I concluded that a lawsuit would have tied up my staff for a year or more, and we needed to innovate our way out of our troubles. In retrospect it was a healthy decision."

Symantec CEO Gordon Eubanks sees it somewhat differently. "We felt then and feel now that there was tremendous innovation in *Q&A*. We made it possible for people who knew the *PFS* products to also use our product. But there were fundamental differences in our products that made us succeed.

"The interesting thing to me today is that the law seems to discount the value of user preferences for a certain inter-
(continues)

Make and fill in forms... All in one package!

Draw lines and boxes of different widths, even check boxes. Type in between single spaced lines.

Easily mix multiple styles and sizes.

Fill & File automatically creates a database to capture data the first time a form is filled in. You can also instantly fill in forms using existing data in dBASE, ASCII, and other file formats.



June 26, 1989

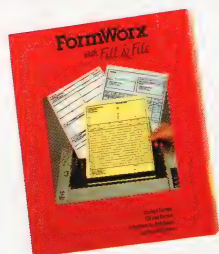
Run-time Fill & File now available. Call for details.

Print data only onto pre-printed forms you already have, or print form and data together onto blank paper.

FormWorx with Fill & File™ combines an easy-to-use form design tool with a powerful form filler ...all in one complete package! And it works with virtually any PC, dot matrix, daisy wheel and laser printer. With direct read/write dBASE compatibility, you can quickly fill out the same form again and again—or different forms that require the same information. It even does math! For just \$149, you get the complete package, including 70 sample forms, pop-up calendar and calculator...and FREE telephone support!

FormWorx®

Reservoir Place, 1601 Trapelo Road, Waltham, MA 02154



FREE DEMO DISK! Call today for a free demo disk to see how FormWorx with Fill & File is the easiest way to collect, store, and communicate your vital information!

800-992-0085 or 617-890-4499 Ext. 2301

Form shown was created and printed using version 2.5 on an HP LaserJet III printer. Some features shown not available on all printers. **30-day money back guarantee** on direct purchases. When ordering by mail, include \$6.75 for shipping in U.S. and Canada. Air mail overseas—\$18. In Mass., add 5% sales tax. Purchase orders accepted from government agencies, institutions, and rated corporations. FormWorx is a registered trademark and Fill & File is a trademark of FormWorx Corporation. All other trademarks acknowledged.

Circle 153 on reader service card

RICHARD LANDRY

face approach. I'm not sure that serves the public interest. The law should protect you from obvious clones, but a company that recognizes the investment customers made in an overall approach should have some freedom to use what has become a de facto standard."

Innovate or Litigate?

Copyright and patent laws were originally designed to encourage a flow of good ideas to the public by making sure inventors felt properly rewarded for their hard work and financial risk taking. Programming activists like Stallman insist that some dramatic action like a Supreme Court ruling or a new legal mandate from Congress is needed to recapture the law's intent.

But there's nothing in the law that says software developers must sue each other over similarities in software look and feel just to gain a momentary upper hand in the market. Resistance to that impulse has allowed at least two World Class Award-winning products to thrive in a crowded software field—*Harvard Graphics* and *Q&A*. If SPC's experience is any guide, developers can simply heed a well-worn bit of advice: Just say no.

PC World—Your PC Resource

PC World's editors extend a special welcome to the subscribers of *PC Resource*, who join the *PC World* reader community beginning with this issue. We're committed to providing you with a blend of information that's unique in the computer magazine field—the latest PC-related news, hard-hitting product comparisons, practical help for your favorite business applications, and consumerist support to guide you through the maze of promises that vendors make and sometimes break.

As editor in chief, I'm interested to hear how *PC World* can better meet your PC information needs. Write to me about this or any other subject at *PC World*, 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685. ☺

The key to versatile performance...

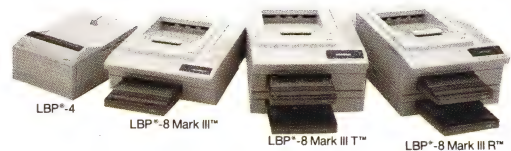


...is the printer that gets it down on paper.

As your software becomes more sophisticated, you need a printer with capabilities to match. Canon's Laser Beam Printers provide all the performance you need to produce top quality results from today's highly advanced software applications.

Canon Laser Beam Printers are a high performance combination of vector graphics for high speed output and scalable fonts for the ultimate in type flexibility. So whichever application you choose, the output always looks the same. Beautiful.

For more information on how Canon printers can get your software's performance down on paper, call 1 (800) 848-4123.



Canon
LASER BEAM PRINTERS

Working To Improve Your Image.™

The Xyquest logo is a registered trademark of Xyquest, Inc. • FormTool™ is a registered trademark of Bloc Publishing • The Aldus logo is a registered trademark of Aldus Corp. • Micrografix® is a registered trademark of Micrografix, Inc. • The WordStar logo is a registered trademark of Micropro International Corp. • The Informix logo is a registered trademark of Informix Software, Inc. • The Symantec logo is a registered trademark of Symantec Corp. • VersaCAD™ is a registered trademark of Prime Computer, Inc. • Lotus® is a registered trademark of Lotus Development Corp. • SPC Software Publishing is a trademark of Software Publishing Corp. • The Samna logo is a registered trademark of Samna Corp. • The Microsoft logo is a registered trademark of Microsoft Corp. • Corel® is a registered trademark of Corel Systems Corp. • Quicken® is a registered trademark of Intuit • The WordPerfect logo is a registered trademark of WordPerfect Corp. • Computer Associates® is a registered trademark of Computer Associates • The Ashton-Tate logo is a registered trademark of Ashton-Tate Corp. • Digital Research® is a registered trademark of Digital Research, Inc. • Generic Software is a trademark of Generic Software, Inc.

Circle 50 on reader service card

How to get your life organized (30 minutes if you skip

information vital to your professional life. Like appointments, deadlines, personnel, places, figures, project requirements, stray thoughts, and more.

Just type it all in, and Agenda sorts it all out. Grouping relevant information and giving it back to you in an organized, easy-to-read format.

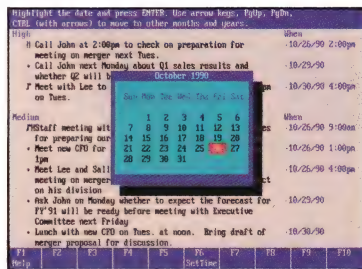
That gives you ten minutes to read this ad. Probably the most luxurious deadline you've had in months.

Which is exactly why you should buy new

Lotus® Agenda® Release 2.0. The personal information manager for your PC or laptop that you can learn to use

Agenda comes with ready-to-use starter applications that will have you up and running in practically no time. Just choose from the Activities Planner, People Manager, Account Manager or Information Sifter. And it's easy to customize applications for more specific needs.

If all of this sounds too good to



Lotus Agenda 2.0 is so easy to work with, you'll start getting better control of your professional life within 30 minutes.

in just 30 minutes. At which time you'll start having better control of all the

in 40 minutes, guaranteed. ahead to the 800 number.)

be true, consider what these Agenda users have to say:

"All of those notes, pads, telephone messages, and slips of paper that

always littered
my desk—and my
mind—are gone...

I just put them into
Agenda."—*Grant Tipler,*
Manager, Corporate
Banking, Head Office,
The Royal Bank of Canada,
Toronto, Ontario

"Agenda is the first program I've seen
that allows me to easily enter information,
file it, and then use it... It justifies
an executive using a computer."
—*Corson Ellis III, President,*
Kessler-Ellis Products, Atlantic
Highlands, New Jersey

"The two most important things in
management are follow-up and follow-
through. Agenda is a close third, because
it's essential for both."—*Randy Fields,*
Chairman, Mrs. Fields, Inc., Park City, Utah

To see for yourself what Agenda can
do, send someone to the nearest software
store to buy it. We're so sure you'll think
it's as remarkable as we say it is, we back
it with a 30-day money-back guarantee.

Or, if you'd rather get
a free demo disk,

just call
1-800-842-8455, extension 840.

Finally, a word to everyone
who read this ad all the way from
the beginning.

Your ten minutes are about
up. Get back to work.

Lotus Agenda

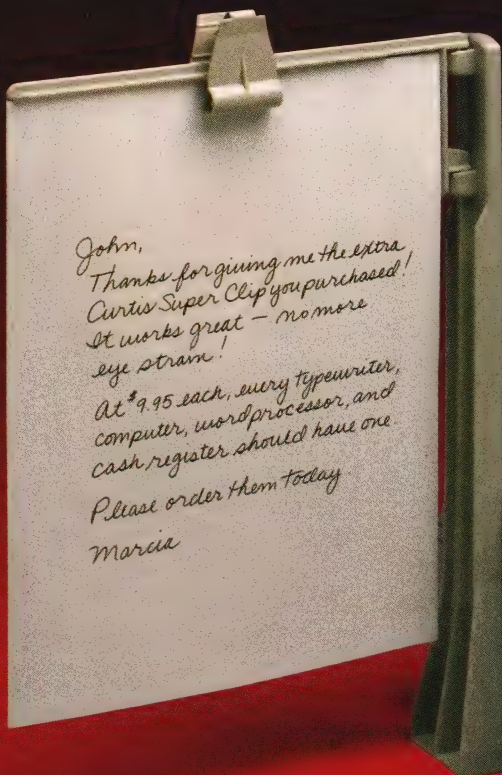


Introducing New Lotus Agenda 2.0

The Experts in Accessories

Manufacturing Company, Inc.

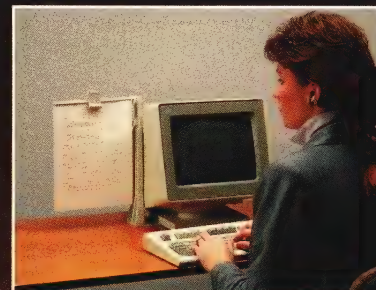
CURTIS



Made in USA
Lifetime Warranty



Swivel arm adjusts to most comfortable viewing angle—swings out of way when not in use.



No mounting required—base slides under equipment, saves valuable desktop space.



Curtis Super Clip, Only \$9.⁹⁵

Positions Copy Perfectly—Relieves Eye And Neck Strain

Inspired by the award-winning Curtis Clip for computer monitors, the Curtis Super Clip is perfect for typewriters, cash registers, keyboards, word processors, etc. It relieves eye and neck strain caused by constant refocusing from desktop copy to character display. The reversible spring-action clip holds paper up to legal size—can be

switched in seconds for right or left hand use. And at the super price of \$9.95, you can afford to get one for the home as well as the office.
#CC-2 Retail...\$9.95



New Improved
Spring-Action Clip

Get the award-winning Curtis Clip for your computer monitor—now with improved spring-action clip.
#CC-1 Retail...\$6.95

For the Curtis dealer nearest you call (603) 532-4123 Ext. 99

Manufacturing Company, Inc.

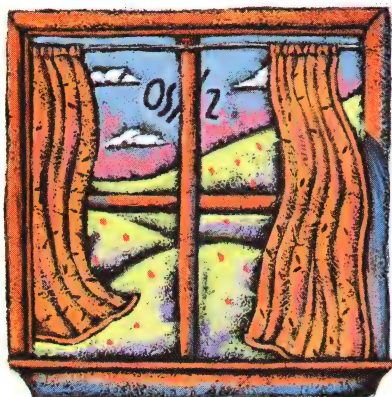
CURTIS

30 Fitzgerald Drive, Jaffrey, NH 03452



LETTERS

Reactions and responses from the PC World community



NICK WILTON

Living With Windows

Richard Landry's July column ["Why Windows Won't Go Away"] reminded me of why I read *PC World*. Even sophisticated buyers sweat out the budget! But I took your advice and purchased hardware capable of handling OS/2—even though it's not fully developed. While *Windows 3.0* finally offers a good graphical environment, your recounting of its slow development holds out hope for a usable OS/2. Meanwhile, our employees will be trained as they use the productive *Windows* environment. I've been following your buying advice for some time, and I haven't been sorry yet.

*Kenneth G. Nagel
Chicago, Illinois*

A Special Issue

I commend you on July's special software issue. It was the most useful issue of a computer magazine that I've run across in years. Thanks as well for not drawing that invisible line between commercial software and shareware. The quality of many shareware packages is indisputable, and I agree with those who insist that users play by the rules and pay the registration fee for shareware they decide to use.

*Edwin S. Gleaves
Nashville, Tennessee*

A Better Coprocessor?

The heading "SX Miscalculation," which appeared above Darrel Bartelheimer's June letter, seems apt. His performance claims regarding coprocessor-equipped 386SXs and 286s don't jibe with my experience. Midrange 286 machines running Intel coprocessors may be slow—the fastest Intel 80287 runs at 10 MHz and lacks some of the 80387's math functions. But an IIT-2C87 contains all the 387 instructions, runs at full processor speed and is currently priced lower than the 20-MHz 387DX. There are valid reasons to purchase a 386SX rather than a fast 286, but sheer speed in DOS applications is not one of them.

*Dan Hackett
Oak Park, Illinois*

From Romania With Love

Thank you for publishing my letter in June. I'm deeply touched seeing so many people responding to my call and offering their help. Having such support, I decided to organize an educational PC club. We're facing a severe lack of equipment...but you can surmount difficulties when you have so

many friends all over the world.

*Radu Ionut
str. A. Vlaicu, nr.11
2700, Deva
Romania*

Windows 3.0 Yeas and Nays

I read your July article on *Windows 3.0*—and based on my personal experiences with version 3.0, it looks like *Windows* has finally lived up to the promises made about earlier versions. I can now take advantage of version 3.0's more icon-oriented operation to set up a Task List for grouping *Windows* applications into different categories, which makes loading them much easier. Color support is vastly better—with the right video adapter, you can actually display 256 colors at 640-by-480 resolution. Sure, the program can stand a few improvements, but Microsoft should be proud—all that hype was worth it.

*Raymond Chuang
Mountain View, California*

I have *Windows 2.1* on my 286, and I've been waiting a long time for *Windows 3.0*. I haven't ordered my upgrade yet, but after a limited performance trial in real mode with *PageMaker 3.0* on a 33-MHz 386, my initial impression is that *Windows 3.0* is full of features but little improved in speed. I've seen claims of performance improvements, but I'd like to see thorough, quantitative tests of the old and new versions of *Windows*.

*Arthur Hopkins
Seattle, Washington*

The only problem I have with *PC World* is that you devote an inordinate amount of space to *Windows*. I understand that version 3.0 is a great improvement, but I (continues)

tried all the earlier versions of *Windows 386* with distinct increases in my blood pressure. They worked fine—with *Windows* applications only. Because of this, I removed *Windows 386* from my hard drive and now use Quarterdeck's *Desq-view 386* to provide a multitasking environment.

R. A. Walsh

New York, New York

BackUps and Downs

I read "No-Excuses Backup Software" in July, and although I think *PC Tools Deluxe* deserves your high rating, I feel you missed a point. To restore a blank, formatted hard disk, you need the backup program on a floppy disk. Unfortunately, *PC Tools Deluxe's* PC Backup won't run from a floppy, so the complete program has to be reinstalled before restoring. Some other programs, such as *Fastback Plus*, will run from a floppy, which can be conveniently included with the backup disks.

Joe Pentecost

Atlanta, Georgia

I agree that *PC Tools Deluxe* is an excellent all-around tool, but when you match it against software written specifically for a particular job, it can't measure up. Norton is new to the backup game, and its backup utility has some shortcomings, as you noted—I've been using *Fastback* for six years, and to rate *Norton Backup* above it is a joke. *Fastback Plus* backs up hidden files and directories and allows for restoring particular files just by entering them. If you wish to include or exclude more than 20 choices of files or directories, maybe backing up isn't what you had in mind, and you should use *COPY* or *XCOPY* instead.

Steve Schafir

Miami, Florida

Disk Technician Omission

I enjoyed "Disk Trouble? No Thanks!" in July, but I was amazed that you omitted Prime Solutions' *Disk Technician Advanced*. From experience, I know that *Disk Technician* is a superior hard disk utility that does things as valuable

as the programs you *did* review, and then some. Why did you omit it?

Al E. Rubottom

San Diego, California

A major criterion of selection for this review was the ability to handle DOS partitions greater than 32MB. At this writing, *Disk Technician* doesn't do so. —Michael Goodwin, associate editor

Shell Cracks

After reading "Making DOS Manageable" in July, I don't think that you gave *XtreePro Gold* a fair shake. You neglected to mention its most important feature: the fine context-sensitive help. It has excellent mouse support, and even without a hard drive, I can run it on my laptop. I've tried several other DOS shells, and *XtreePro Gold* is by far the best.

Rocky L. Hurley

Asheboro, North Carolina

I was excited by your reports on DOS (continues)

We wanted to compare TOPS DOS BUNDLE to NetWare, but we didn't have enough time to install it.



If you don't have time to waste, call 1-800-445-TOPS, ask for ext. 509.

TOPS Network Bundle™ for DOS installs in less than half an hour, and gives you flawless peer-to-peer file and peripheral sharing. Which is why *LAN Times* readers voted TOPS best peer-to-peer network in 1990. And, unlike NetWare®, TOPS DOS Bundle does not require you to purchase a separate server, undergo hours of training and support, or manage 32 disks and 21 manuals.

TOPS DOS Bundle makes it easy to mix PCs and Macs

on your network. And with TOPS for Sun Workstations, you can share files with powerful Suns. Plus, TOPS DOS Bundle comes with Sitka's* all-new InBox™ electronic mail, which *PC Computing* calls "a piece of cake to install and a pleasure to use." Don't get frustrated with the old standard.

Try the new one.



TOPS in networking. And beyond.

*Formerly TOPS.

We've changed the company's name, but we're still the makers of the same great products—helping your workgroup and entire company work together better.

For distribution information outside the U.S., call Sitka International at +1-415-769-2449; Sitka Europe at +44 276 51440; or Sitka Canada at 415-769-8700, ext. 900. NetWare is a registered trademark of Novell, Inc. Network Bundle and InBox are trademarks of Sitka Corporation. Copyright© 1990, Sitka Corporation.

New!
Version 1.2

Publish It!

HOME OFFICE
COMPUTING
1989
EDITORS'
PICK

INFO
WORLD
BEST IN
ITS CLASS
Jun 18, 1990

Chosen as
BEST
BUY
PC WORLD

PC
MAGAZINE
EDITOR'S
CHOICE

in less than an hour.

PUBLISH IT!—A full-featured, fully integrated desktop publishing powerhouse with word processing, page layout, typesetting and graphics.

For all its state-of-the-art ability, *PUBLISH IT!* is incredibly easy to learn—refreshingly so. *PUBLISH IT!* combines the familiar GEM User Interface, our Quick-Start Mini-Manual, a full complement of Help Screens, and the practical **WYSIWYG (What-You-See-Is-What-You-Get)** display—all designed to get you up and running in less than one hour!

SPECIAL FEATURES:

- **Flexible Page Layout:** With your mouse or keyboard, you can overlap, reposition, resize, & reshape the text, columns, graphics.
- **More Typefaces and Sizes:** Choose from over 1350 possible type-style combinations! Opt for bold, italic, underlined, light, white, & superscript or subscript characters. Type sizes range from 7 to 72 point.
- **Premium Quality Printouts:** *PUBLISH IT!* uses a high density printout format that gives you superior quality printouts on your laser or dot matrix printer.
- **Built-in Word Processor:** All the features necessary for everyday word processing, plus most of the sophisticated ones found only in more expensive programs.
- **Text Importing:** Load documents from WORDPERFECT, MICROSOFT WORD, WORDSTAR, WORD WRITER PC, or from any other program with an ASCII text format directly in *PUBLISH IT!*
- **Built-in Graphic Toolbox:** Draw lines, boxes, circles, curved corners, and "free-hand" graphics. Plus, choose from a wide variety of built-in line and fill patterns.
- **Graphics Importing:** Directly import graphics from LOTUS 1-2-3, GEM DRAW, GEM GRAPH, GEM SCAN, PC PAINTBRUSH, and PUBLISHERS PAINTBRUSH. Then crop and size them to fit.
- **Automatic Text Flow and Word Wrap.**
- **Multiple Size Page Views.**
- **Kerning and Leading.**
- **Over 150 Professionally Drawn Graphics & Illustrations.**
- **Plus, you get worksheets, time-saving features, sample documents & more!**

NEW FEATURES:

- **More than 85 Professionally Designed Layouts:** DESIGN IDEAS™. You can choose from over 85 pre-designed formats. This allows you to easily create layouts for ads, brochures, newsletters & more.
- **Single Step Undo Function.**
- **More Compatibility!** Now compatible with: Hewlett-Packard Soft Fonts and DeskJet Printers, TIFF, Encapsulated PostScript and Splash! graphic formats.
- **Monospacing:** When using Typographica or Bitstream monospace fonts, you can now work in a mono-spacing mode.
- **Supports Downloadable PostScript fonts:** Now you can add additional PostScript fonts from sources such as Bitstream and Adobe.
- **Imports Encapsulated PostScript Graphics:** Now you can rotate your EPS graphics in 90 degree increments.
- **Extended Print to Disk Capability:** Now you can print to disk no matter what printer configuration you have.

Suggested Retail Price **\$249.95**
Includes 5¼" & 3½" disks; supports hard drive.

At your local dealer or order direct from
Timeworks: **1-312-948-9202.**

- ☐ **Yes! Send me *Publish It!*, I've enclosed \$249.95 + \$4.70* (shpg. & handling). Total \$254.65**

- ☐ **Upgrade price \$29.95 + \$4.70* (shpg. & handling). Total \$34.65**

Send inside manual cover.

I get a full 60 day money back guarantee when I order by mail.
Illinois residents add 6.5% sales tax.

Mail To: **TIMWORKS**
444 Lake Cook Rd.
Deerfield, IL 60015-4919

*Prices apply to shipments within the Continental U.S.

Name _____

Address _____

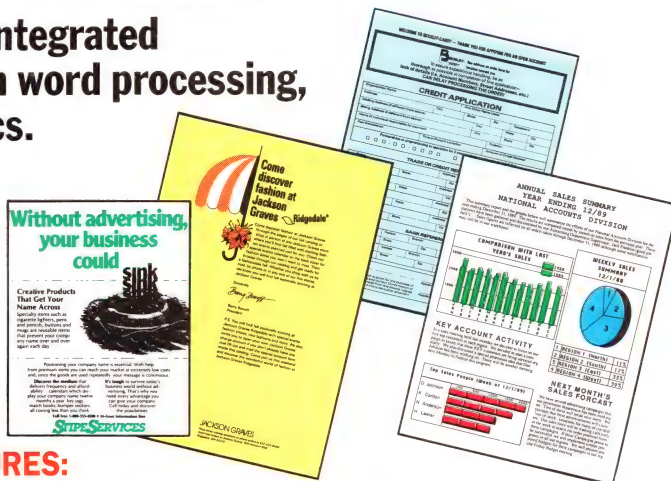
City/State/ZIP _____

Card Number _____

Signature _____ Exp. Date _____

☐ Check, ☐ MC, ☐ Visa, ☐ Amex

708-948-9202 FAX 708-948-7626



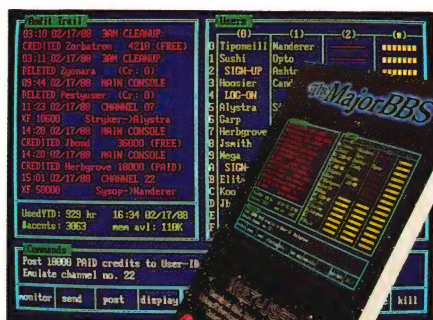
TIMEWORKS
PLATINUM
SERIES



PUBLISH IT! is a trademark of Timeworks, Inc.
© 1990 Timeworks, Inc. All Rights Reserved.
All other trademarks are of their respective companies.

Circle 260 on reader service card

Operate your own BBS with the world's most popular, expandable, flexible Multi-User Online Bulletin Board System



The Major BBS® starter system:

A complete BBS software package for your PC, PS/2, XT, AT, 386, 486, or compatible. Includes electronic mail with binary and ASCII file "attachments", SIG conferencing or "forum" areas with configurable security level access control, file upload/download, message keyword searching, "quickscans" for fast access to new messages, message and file "threading", real-time multi-user "chat" and teleconferencing, "classified ad" and "user registry" databases, etc. Also includes accounting, Audit Trail, and timed usage-metering features, and hundreds of convenience features for the Sysop (System Operator), such as a full-screen configuration editor, the ability to import/export files to/from floppy without system shutdown, "SIG-Op" privilege delegation, and much more. Supports up to 2 simultaneous users (from a database of thousands) on a single CPU. Works with standard Hayes-compatible COM1/2/3/4 internal or external modems, or with serial ports up to 38,400 bps. Minimum RAM requirement 512K. Minimum disk requirement 20MB. Requires PC-DOS or MS-DOS 3.1 or later.

The Major BBS Standard Edition \$ 59

When you're ready to expand:

No LAN or multi-tasking OS necessary! Double the number of simultaneous users that your system can support, from 2 to 4, or 4 to 8, or any number up to 64 simultaneous users on a single CPU, for a flat \$300 software license fee per doubling. The upgrade process is quick, automatic, and fully upward-compatible — i.e. you can install an update or upgrade onto your existing system without disrupting any of your user account files, E-Mail messages, configuration variables, or any other aspect of your system. For up to 16 users, 640K RAM is sufficient; above 16 users, more than 640K may be necessary. Prerequisite: The Major BBS (any edition).

Users, per doubling (up to 64) \$ 300

If you need multi-modem hardware:

Our Model 2408 consists of up to 8 Hayes-compatible modems on a single circuit card, for the PC/XT/AT/386/486 family. Each modem operates independently at 300/1200/2400 bps (automatically switching to match the caller's bps rate). Built-in serial ports are not COM-port based, so this card can co-exist with other COM port hardware in the same machine (drivers for software other than The Major BBS are not included but may be written). RJ-11 telephone cables are included. MNP Class 4 (error correction) modems are available as an option.

	non-MNP	MNP Class 4
2408 w/2 modems	\$ 1536	\$ 1696
2408 w/4 modems	\$ 2090	\$ 2388
2408 w/6 modems	\$ 2644	\$ 3080
2408 w/8 modems	\$ 3198	\$ 3772



When you're ready for source code:

With the C source code to The Major BBS, you can add 3rd-party software, such as The Major Database (a general-purpose, configurable database manager), various multi-player real-time adventure games, dial-out utilities, global command utilities, accounting enhancements, and much more. Also, you can maintain your own copy of the BBS, or you can modify it to suit your own unique requirements. The Major BBS C source code package is fully documented, and it includes the Galacticcomm Software Breakthrough Library, plus all of the

utility object libraries, linker control files, and DOS "batch" files you will need, along with a detailed Programmer's Guide. Works with Turbo C 1.5, 2.0, or 2.01, Turbo C++, or Microsoft C 4.0, 5.1, or 6.0. Prerequisite: The Major BBS Standard Edition.

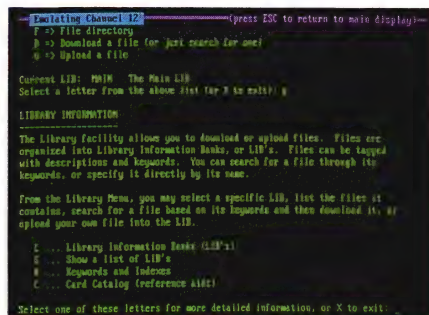
Standard Edition C source code \$ 285

For the ultimate in file transfer flexibility:

The File Library Edition of The Major BBS has everything that the starter system does, plus built-in ZMODEM, KERMIT, SuperKERMIT, YMODEM-g, and YMODEM (batch) file transfer protocols. Also, it offers super-fast pre-indexed keyword file searches, library-wide searches as well as constrained searches, special file upload/download accounting options, alternate DOS "paths" per sub-library, split paths for CD-ROM support, a transparent "DOS-only" sub-library option, and much more. This package is for you if the focus of your system will be the upload and download of large amounts of files. You can easily upgrade from the starter system to the File Library Edition, without losing any of your data files or configuration work you have already done. Prerequisite: The Major BBS Standard Edition.

File Library extensions \$ 199

File Library C source extensions* . . . \$ 159

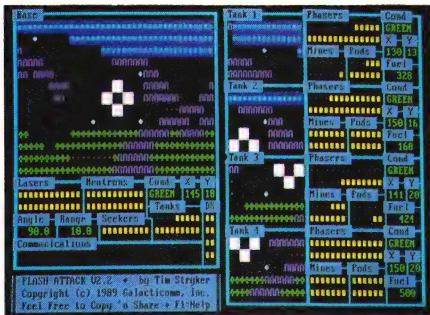


If you decide to offer online games and amusements:

The Entertainment Edition of The Major BBS has everything that the starter system does, plus Quest for Magic (a multi-player interactive text adventure game), Androids! (a multi-player arcade-style ANSI-graphics game), Flash Attack (a futuristic tank and laser battle for multiple players with IBM PC's), and the Action Teleconference Link-Up, which includes private "chambers", action verbs (grin, wink, nudge, etc.), the ability to link to other systems for huge multi-system teleconferences, custom entry/exit strings, user-configurable profiles, and much more. This Edition supports the Flash™ Protocol (where most of the game functionality is on the user's



end of the phone line), for which dozens of incredible new multi-user games are now being developed. Upgrading from the starter system to the Entertainment Edition is quick



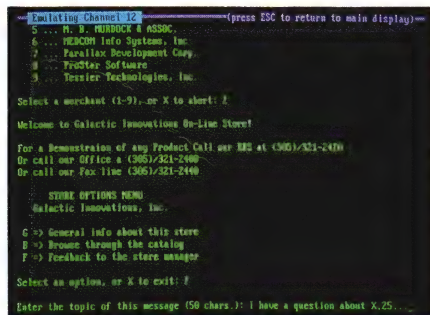
and easy and involves no loss of data or function. Prerequisite: The Major BBS Standard Edition.

Entertainment extensions \$ 149
Entertainment C source extensions* . . \$ 129

If your requirements include order entry and catalog sales:

The Shopping Mall Edition of The Major BBS has everything that the starter system does, plus online shopping. Your online mall can have multiple "stores", each run by its own separate "merchant", if desired. Each merchant has control over his or her own product line, pricing, discount structure, store welcome message, sales tax handling, etc. Also, each merchant may create up to 6 different payment methods (e.g. VISA, MC, AMEX, C.O.D., "bill me", etc.), and up to 6 different shipping methods (e.g. UPS, FedEx, US Mail, etc.), each with its own rates (flat rate, percent of sale, 1st-ounce/add'l-ounce, or 1st-pound/add'l-pound). Users may browse product catalogs at no obligation, or order products and services directly online! Orders generate invoices that are posted to the individual merchant as attachments to E-Mail. To upgrade from the starter system to the Shopping Mall Edition takes only a few minutes. Prerequisite: The Major BBS Standard Edition.

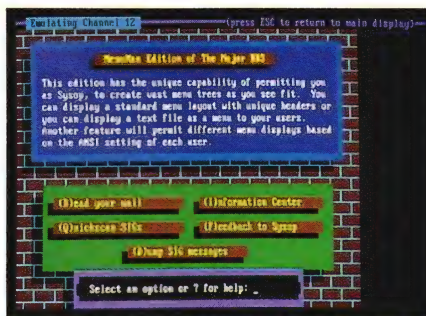
Shopping Mall extensions \$ 249
Shopping Mall C source extensions* . . \$ 189



For super-flexibility of menu trees and ANSI screens:

The MenuMan Edition of The Major BBS can do everything that the starter system does, and in addition you as Sysop can create your own menu trees, with menus leading to menus leading to menus, as deeply "nested" as you like. The "leaves" of your menu trees can be ordinary ASCII or ANSI files, which are simply dumped to the user's display (with or without automatic screen breaks), or they can be any of the built-in functions of the BBS such as scanning the user's incoming E-Mail or firing up a SIG quickscan. Includes commands like *GO <pagename>*, *FIND <topic>*, *USERS*, and for the Sysop, the equivalent of the DOS commands *DIR*, *RENAME*, *COPY*, *DEL*, *MKDIR*, and *RMDIR*, as well as a set of privileged commands for editing and extending the menu trees, remotely, while the BBS remains fully online. Upgrading from the starter system to the MenuMan Edition takes only minutes. Prerequisite: The Major BBS Standard Edition.

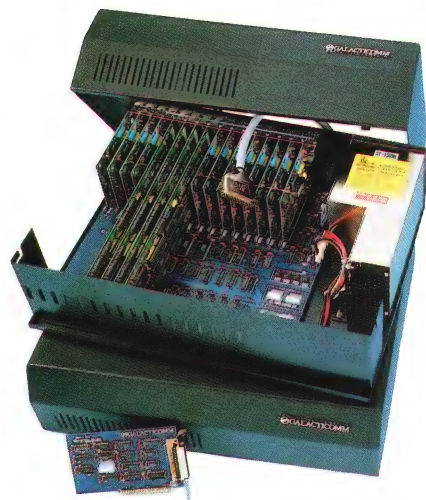
MenuMan extensions \$ 149
MenuMan C source extensions* \$ 129



As your system grows larger...

The GalactiBox™ is our 16-slot "expansion chassis", for large-scale systems. It has the unique ability to address individual modems by slot number rather than just COM port address, so you can use up to 16 standard internal modems in it, side by side, without conflict. Includes built-in 150W power supply, interface card for your XT/AT/386/486, cables, and full documentation. Up to 4 boxes may be attached to one CPU, for a total of up to 64-channel expansion capacity. Prices shown below are for standard 300/1200/2400 bps Hayes-compatible internal modems. We also have 9600 bps V.32/V.42 MNP Class 5 modems available, call for prices.

GalactiBox (unpopulated) \$ 1992
GalactiBox w/4 modems \$ 2416
GalactiBox w/8 modems \$ 2840
GalactiBox w/16 modems \$ 3688



...and that's not all! For advanced applications, we also offer an X.25 direct-connect software option, a protected-mode development toolkit, and special licensing arrangements for up to 256 simultaneous users! And don't forget the smorgasbord of 3rd-party add-ons available, such as The Major Database from Galactic Innovations. Custom programming and integration services are also available. Your system can grow in power and sophistication, far into the future, with The Major BBS.

Here's How To Order:

Just dial (305) 583-5990 and say, "I'd like to place an order!" We can generally ship your order within 48 hours. We accept major credit cards, or we can ship C.O.D. Prices shown do not include shipping or insurance.

For more information, you may either call the main order number and ask for a sales engineer, or dial (305) 583-7808 with your modem (8-N-1) for a free demo of most of our products. This demo system also contains an online Shopping Mall with many of the 3rd-party add-ons available for The Major BBS, operated by the 3rd-party vendors themselves.

Give us a call today!



The Major BBS, Flash Protocol, and GalactiBox are trademarks of Galacticcomm, Inc. PC, PS/2, XT, AT, and PC-DOS are trademarks of International Business Machines Corp. Hayes is a trademark of Hayes Microcomputer Products, Inc. The Major Database is a trademark of Galactic Innovations, Inc. Turbo C and Turbo C++ are trademarks of Borland International, Inc. MS-DOS and Microsoft C are trademarks of Microsoft Corp. UPS is a trademark of United Parcel Service. FedEx is a trademark of Federal Express Corp. MNP is a trademark of Microcom, Inc.

*The C source code extensions are necessary, if you wish to combine multiple extended Editions together, or add 3rd-party software, or develop your own modifications. Prerequisites, in each case, are the Standard Edition C source code, and the corresponding extended Edition.

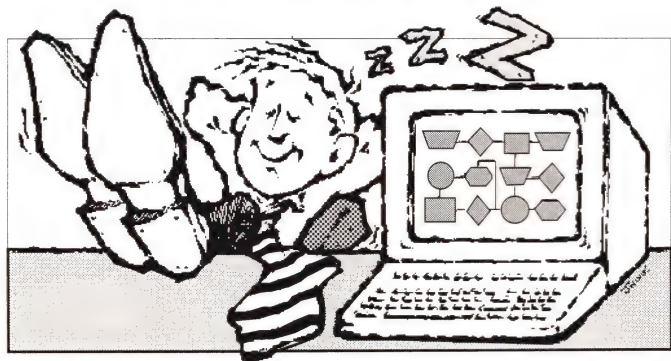
GALACTICOMM

Galacticcomm, Inc. 4101 S.W. 47 Ave.
Suite 101, Fort Lauderdale, FL 33314

Modem: (305) 583-7808
Fax: (305) 583-7846
Voice: (305) 583-5990

Circle 63 on reader service card

Shh!



Don't tell your boss about EasyFlow!

Don't say how much time you saved on flowcharts and data flow diagrams. **EasyFlow**, unlike most "screen draw" programs, is dedicated to fast composition and modification of flowcharts and data flow diagrams.

Don't breathe a word about the automatic line routing, automatic text centering, the slick cut & paste or how you created charts and then cleanly moved them into a desktop publishing program. Tell your boss you had to sweat bullets to come up with these amazing results.

Don't point out that **EasyFlow** works with most matrix printers, laser printers and plotters.

Keep the 200 page manual out of sight. Don't get caught with one of the 350 context sensitive help messages on your screen.

Don't let the boss know that **EasyFlow** only costs \$149.95 and that RUSH delivery is available.

Do tell the boss you are a hard working genius but don't mention the other 80,000 geniuses whose bosses don't know either.



Flowcharting Made Easy.

HavenTree Software Limited

P.O. Box 1093 - M Thousand Island Park, NY 13692
Order Desk: 1-800-267-0668 Info: (613) 544-6035 ext.47

Fax: (613) 544-9632

From our fax to yours... Info Fax: (613) 544-2049

LETTERS

management products in July. But I found a mistake in the Features Evaluation on page 121: *PC Tools Deluxe* does provide file viewing of *Paradox* files. I use that function of *PC Tools* every day.

Brian Culberson

Atlanta, Georgia

Finding the Bulletin Board

Your July issue, which was enjoyable and informative, said that Peter Norton Computing has a CompuServe BBS. I couldn't find it, but after getting E-mail help from your staff, I worked out a solution. At a CompuServe prompt, type **go pcvena**, press **<Enter>**, and follow CompuServe's instructions from there.

Bill Lyons

Atlanta, Georgia

Tip Slip

Here's a correction to Power Tip No. 109, "Quick Totals for 1-2-3," printed on page 58 of the July issue. The tip de-
(continues)

POWER TIP NO. 132

Printing Windows 3.0 Colors in Black and White

Printing colorful graphics on black-and-white printers doesn't work very well—true colors print as lifeless black blobs. You can avoid this problem by changing the Luminance value of custom colors to a value between 180 and 210. Open the Color utility from the Control Panel. Select *Color palette Define custom colors*. Select your defined colors, and choose an appropriate hue. Your custom colors will now print as gray dot patterns—not a perfect solution, but better than basic black.

Brian Livingston

New York, New York

After everything
you've heard
about Windows
Computing,
there are only
two things you
should believe.

Windows™ C

Free Working Model

Your

See for yourself. With Windows™ Computing, using your PC becomes easier, faster, and more productive than you ever imagined possible. But you don't



Windows Computing is the Windows version 3.0 environment combined with any of the hundreds of Windows applications already available.

have to take our word for it. Because, right now, we're making fully functional Working Models of Microsoft® Windows version 3.0, Microsoft Excel, Project, Word and PowerPoint® presentation graphics program as easy to get a hold of as they are to use.

Just pick up the phone and call (800) 323-3577, Dept. M73, and we'll

*The first Working Model you select is free during our Windows Computing Promotion, September 15 through December 31, 1990. One free Working Model per person. Each additional Working Model is \$9.95, applicable sales tax not included. Offer good while

Computing

Microsoft®

eyes.

send you a free copy of the Working Model* you're most interested in.

Or, if you would prefer, just ask for the date, time and location of a Windows Computing seminar being held near you. Either way, the experience is sure to impress you.



The truth is, we believe there could be only one reason why people might not see just how much Windows Computing means to the future of the personal computer.

They haven't looked.

Microsoft®
Making it all make sense™

The question is not “do you need a network?”; the question is “what kind of network do you need?”

If your company has more than one computer, connecting them together is either an immediate concern or soon will be. There are numerous connectivity methods available. The choice your company makes will directly affect you. Want to discover the most appropriate connectivity method for *your* needs? It may be a surprise.

Check off the capabilities you need:

- ☐ 1. Share access to one or more printers or plotters
- ☐ 2. Share access to a modem
- ☐ 3. Exchange electronic mail and messages with other users
- ☐ 4. Electronically transfer data files between computers (rather than pass diskettes)
- ☐ 5. Access a common library of data files, like drawings, document templates, memos, boilerplate, etc.
- ☐ 6. Access a common database, where multiple users must access the same records simultaneously (e.g. an order entry system)

If you checked any or all of the first five capabilities listed above, but not number six, your company does **not** need a full-blown LAN. This news can save your company a lot of money and make life much simpler for everyone concerned. Skip to the next paragraph immediately. If you selected the sixth capability, a data-sharing LAN is needed, but only for those users who must access the shared database. To achieve the other capabilities, your best—and most economic—solution is...

Systemizing™ - The Sensible Network

Heard of it? Over 50,000 people use Systemizer® every day—and have for over four years—at many of the world's largest organizations.



Systemizing is an alternative (or supplement) to a LAN. It's a connectivity method that works with practically every computer in existence—ranging from PCs to mainframes—regardless of brand, model, operating system (DOS, UNIX, PICK, etc.), or application. You can Systemize without putting any hardware or software inside your computers. To quote one customer: “It's the most sensible solution to connectivity I've ever encountered!”

Do yourself and your company a favor, call our toll-free number and ask for our **Systemizing Demo**. The demo alone is widely praised as “incredible”.

For a free desktop demo, call:

1-800-433-5373

(or fax your request to 1-214-696-3925)



CONNEXPERTS®

A division of Applied Creative Technology, Inc.
Dallas, Texas, U.S.A.

LETTERS

scribes a macro to place a dashed line and an @SUM() function beneath a column of numbers. The instruction as printed wouldn't work. This does: “Enter the label ‘\-{down}@sum({up}).{end}-{up}’~ in an out-of-the-way cell.” The other directions in the Power Tip work fine.

CC Landry

Metairie, Louisiana

This letter and others we received provide workable corrections, although the original tip would have worked had not a typesetting slip added a space between ‘{END}’ and ‘{UP}’.

**Power Tips are a part of
PC World that you write.**

Letters like this one demonstrate that our readers really put Power Tips to use. And since they come from you, they are, along with this forum, the part of PC World that you write. So if you have developed a technique for increasing PC productivity, share it—you can earn \$25 or more on publication, and you'll see your name in PC World. Send Power Tips to PC World, Editorial Department, 501 Second St. #600, San Francisco, CA 94107, c/o Power Tips. —Ed.

Corrections and Clarifications

A June *Top of the News* item, “WordPerfect Joins Alliance,” erroneously stated that WordPerfect president Alan Ashton owns the majority of WordPerfect stock.

In our Features Evaluation for “No-Excuses Backup Software” in July, the subcategory heading “Backs up to all floppy media” is misleading. Actually, the reviewed programs back up to all standard 3½- and 5¼-inch floppy media.

*To send correspondence, please see
How to Contact PC World, page 4. ☺*

In Redondo Beach, California . . .

You'll find breathtaking ocean views, sensational surfers and Gateway 2000 computers.

Dive 'N Surf, famous for Body Glove® fashions and watersports equipment, is a



Graham Pask, Computer Systems Manager for Dive 'N Surf, and his Gateway 2000 25 MHz 386 network server.

member of the growing family of Gateway 2000 customers in California. Dive 'N Surf Computer Systems Manager Graham Pask chose a Gateway 25 MHz 386 machine for his network server. The system runs point-of-sale, inventory control, word processing and desktop publishing software.

"I decided to buy a Gateway 2000 system because they had everything I wanted for a good price," said Graham. "But what really impressed me was the service. I had a problem with my 3 1/2 inch drive so they sent me a new drive the very next day."

Graham said he was so happy with his Gateway system at work that he bought a Gateway 2000 25 MHz 386 Cache machine for his home.

Until well after sunset, surfers ride the big waves on the Pacific Ocean near Redondo Beach, California.

And In Barrow, Alaska . . .

Over 300 miles north of the Arctic Circle, you'll find polar bears, seals, whales, walrus, lemmings, snowy owls and what appear to be the largest mosquitoes in existence. On a summer afternoon you'll also see parka-clad tourists walking among local residents in shorts. And of course you'll find a good Mexican restaurant and Gateway 2000 computers.

Cape Smythe Air Service, a regional commuter airline serving Barrow, Kotzebue, Nome and remote villages in Alaska, has one of several Gateway 2000 computers operating in Barrow. Jeff Frier, Cape Smythe's accountant, chose a Gateway 2000 386SX to run spreadsheet, data base and accounting applications.

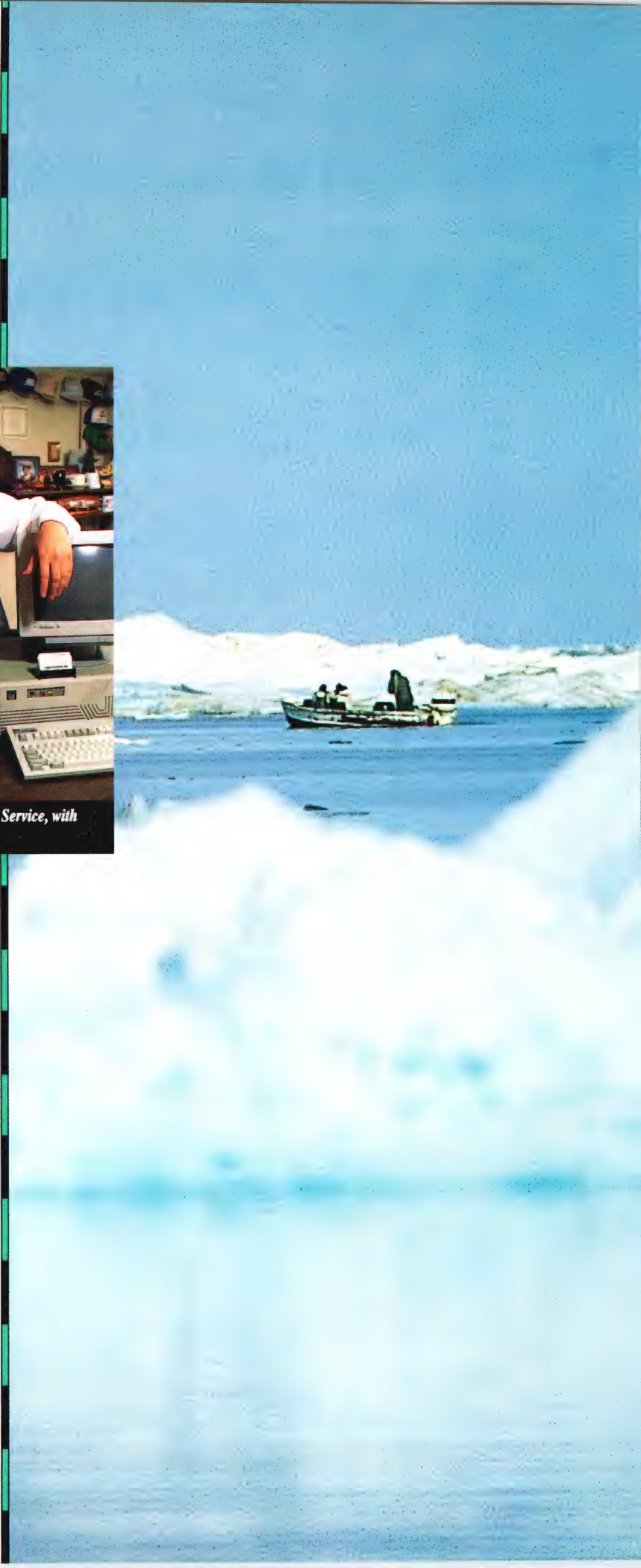
"I was trying to decide between Gateway 2000 and a competitor," Jeff commented, "so I talked to a person who owns the competitor's system. He was disgruntled about the service he received from them. Then I talked to another person in Barrow who has a Gateway and she was happy with the product and service. The choice was pretty obvious -- when you're doing business in a remote area, the most important things a vendor can offer are reliability and good service."

Jeff said he also appreciated Gateway's features and price. "When you have to pay \$6 a gallon for milk, it's nice to find a bargain somewhere." Jeff plans to buy another Gateway 2000 computer in a few months .



Jeff Frier, Cape Smythe Air Service, with his Gateway 2000 386SX.

On a mid-July day in Barrow, Alaska, fishing boats weave in and out of icebergs on the Chukchi Sea.



In Bradford, Pennsylvania . . .

You'll find a charming small city nestled in the Allegheny National Forest. The city's most prominent local business is the Zippo Manufacturing Company, where you'll find 18 Gateway 2000 computers in use.



Fred Gronemeyer, Zippo Manufacturing Company, and his Gateway 2000 20 MHz 386 system.

Zippo is known around the world for its windproof lighter made famous during the second World War, although today the company's product line includes many other specialty advertising items. Fred Gronemeyer, Systems Analyst for Zippo, chose Gateway 2000 as the company's standard PC.

"We needed to set standards for PC's and software to make the most efficient use of these tools," Fred remarked. "We started out with PC's from different manufacturers, but once I tried Gateway I was convinced we could get the highest quality, most reliable machines at the best price from Gateway 2000. I was also impressed by my salesman and the tech support people I've dealt with at Gateway."

Fred said by the end of the year Zippo will be running every system Gateway 2000 makes, from 286's up to a 486 and everything in between.

Main Street. U.S.A. is located in Bradford, Pennsylvania.

And In New York City . . .

You'll find your senses overwhelmed by the countless sights and sounds of this one-of-a-kind city. And of course you'll find thousands of Gateway 2000 computers here.

One New York City Gateway 2000 owner is



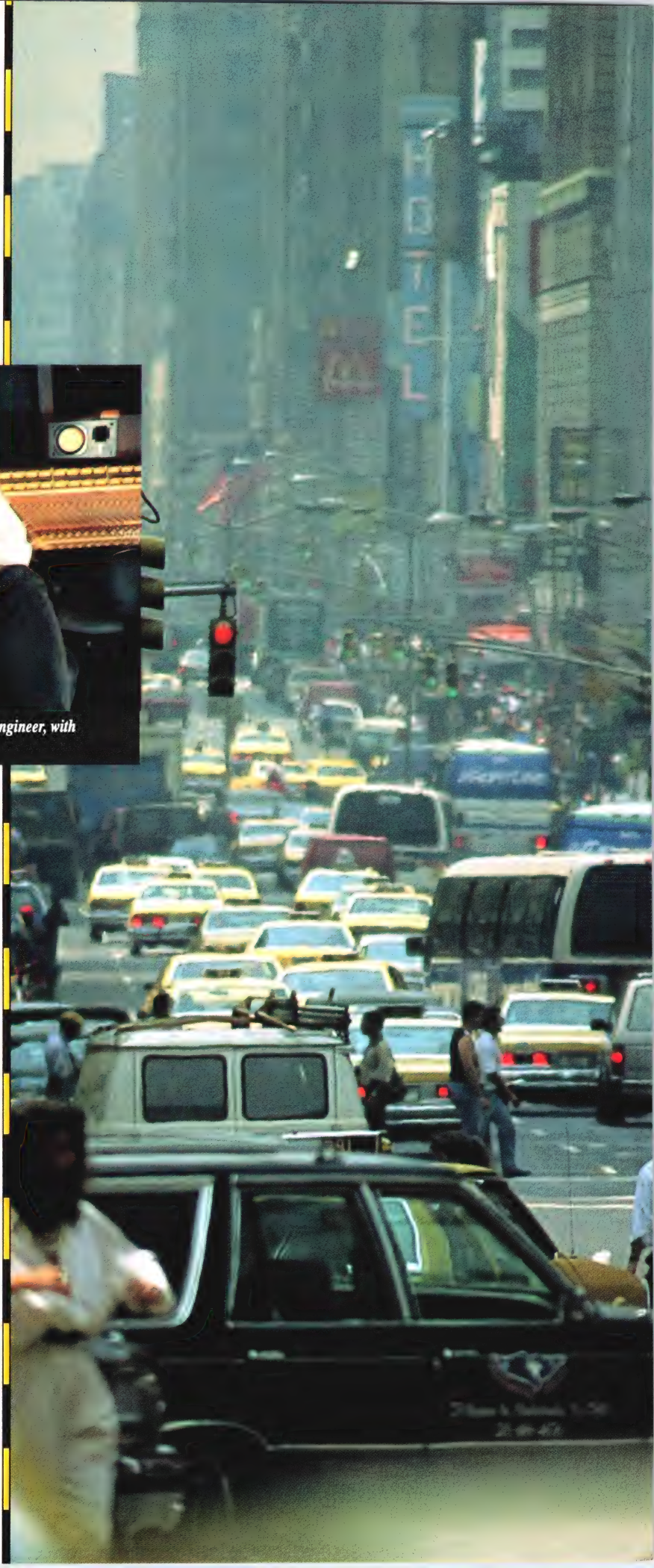
Jim Rondinelli, independent record producer and engineer, with his Gateway 2000 386SX.

independent record producer and engineer Jim Rondinelli. Jim uses his Gateway 2000 386SX with a sophisticated player piano sequencer to compose music.

"The software I use is written for the Mac and for IBM compatibles," Jim said, "but it runs much better on IBM compatibles. And it runs best of all on my Gateway. I travel often and I've used my software on a lot of other machines. They don't even compare with my Gateway 2000."

Jim said he bought his Gateway 2000 because it was equipped for the real world with ample hard drive capacity and RAM, both sizes of disk drives and color VGA graphics.

"It's the fastest file transfer computer I've ever used," continued Jim, "plus it ran right out of the box. One afternoon and I was fully functional on a brand new system."



The streets of Manhattan are a constant blur of activity.

Near Camp Verde, Texas . . .

You'll find the magnificent Hill Country of Texas with rattlesnakes, prickly pear cactus and huge cattle ranches. You'll also find Larry Mahan and his Gateway 2000 computer.

Larry Mahan is to rodeo what Jack Nicklaus

is to golf. He is Six Times World Champion All-Around Cowboy and is a member of the Cowboy Hall of Fame. But Larry also runs a cattle and horse ranch and is involved in a western apparel manufacturing company and a new Southwestern foods company. His Gateway 2000 20 MHZ 386 system is an integral part of his business operations. "We run cow and calf software for

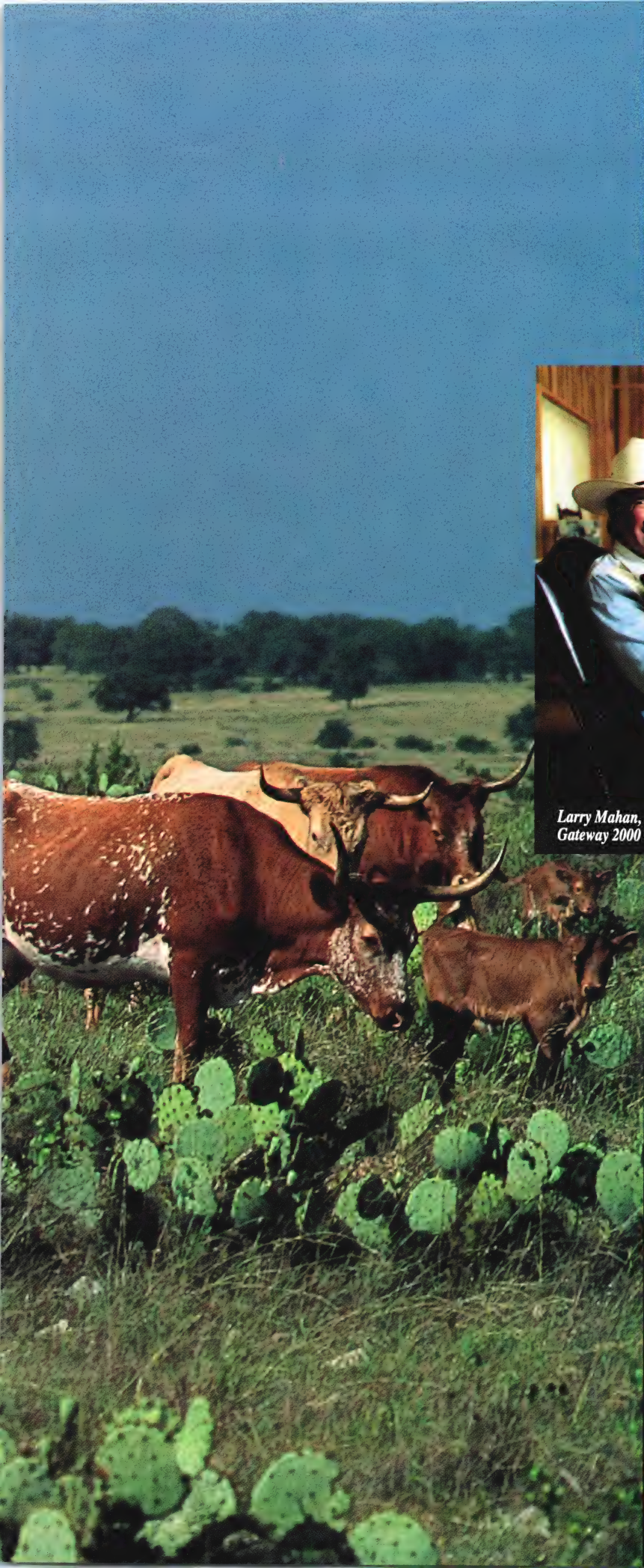


*Larry Mahan, rodeo star, and his
Gateway 2000 20 MHZ 386 system.*

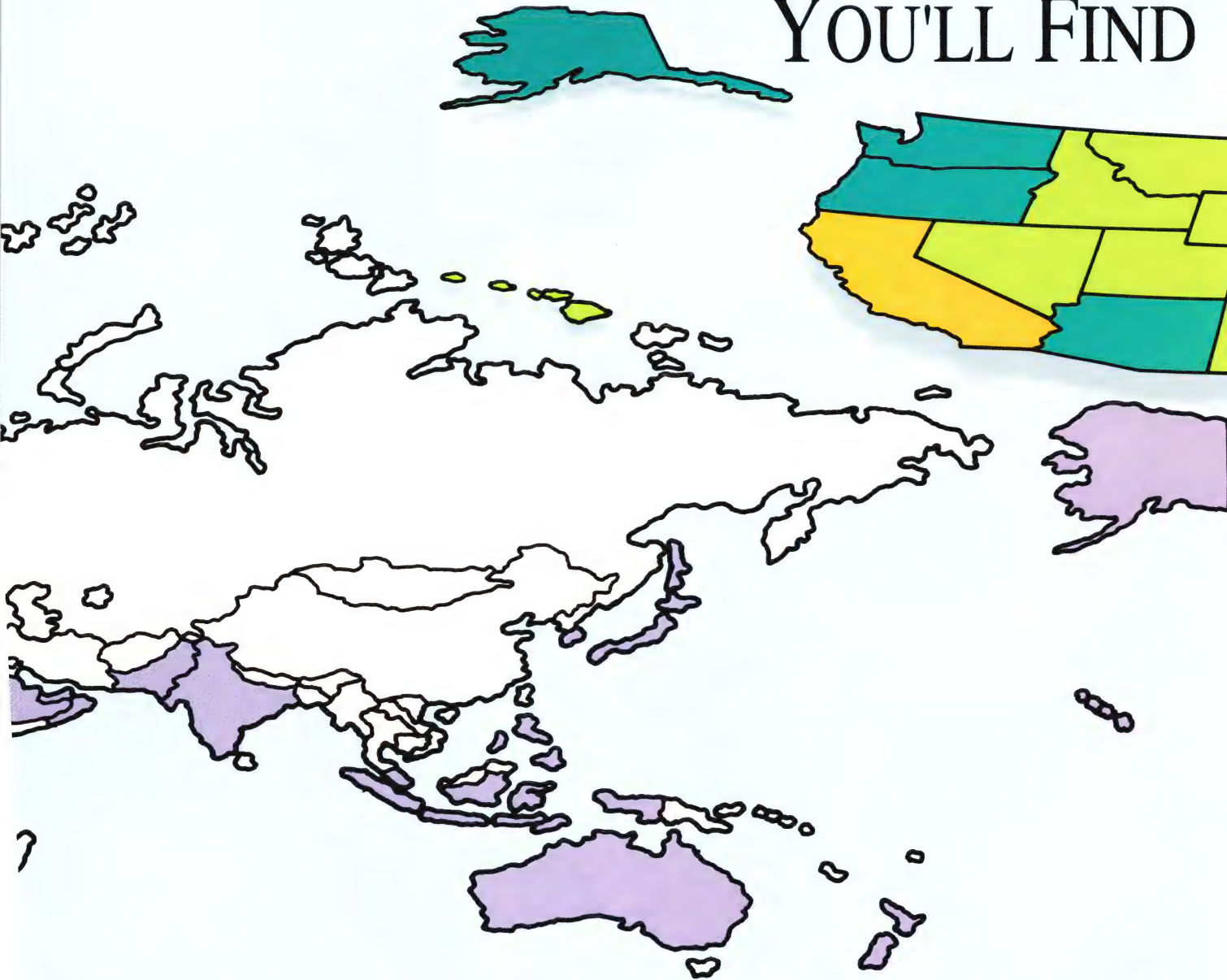
our Longhorn cattle herd," Larry said. "You can't really manage a livestock business efficiently without it. Plus we do accounting, spreadsheets and word processing on our Gateway 2000 computer."

Asked why he chose Gateway 2000, Larry said, "They had the best features and price – and I thought a computer company that puts pictures of cattle in their ads had to be my kind of people. And I was right. The people I've talked with at Gateway 2000 are honest-to-goodness nice folks. It's a pleasure doing business with them."

Larry Mahan raises registered Texas Longhorn cattle.



ACROSS THE COUNTRY YOU'LL FIND



You'll find so many Gateway 2000 computers in so many places today because people everywhere know a good value when they see one. In all 50 states and in over 70 foreign countries, thousands of people are comparing prices, quality and service – and choosing Gateway 2000.

But value alone doesn't explain how a little company in the Midwest, started just five years ago, managed to outdistance hundreds of other companies, selling more systems through the direct market channel today than any other PC manufacturer in the country.

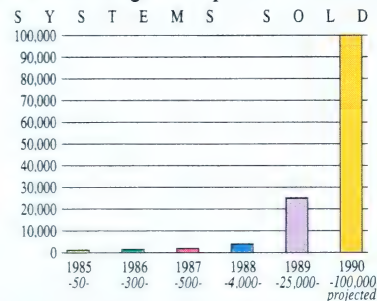
The explanation is that the company has always maintained a small company attitude. With Gateway 2000, you still get the little things

you'd expect only from a small firm.

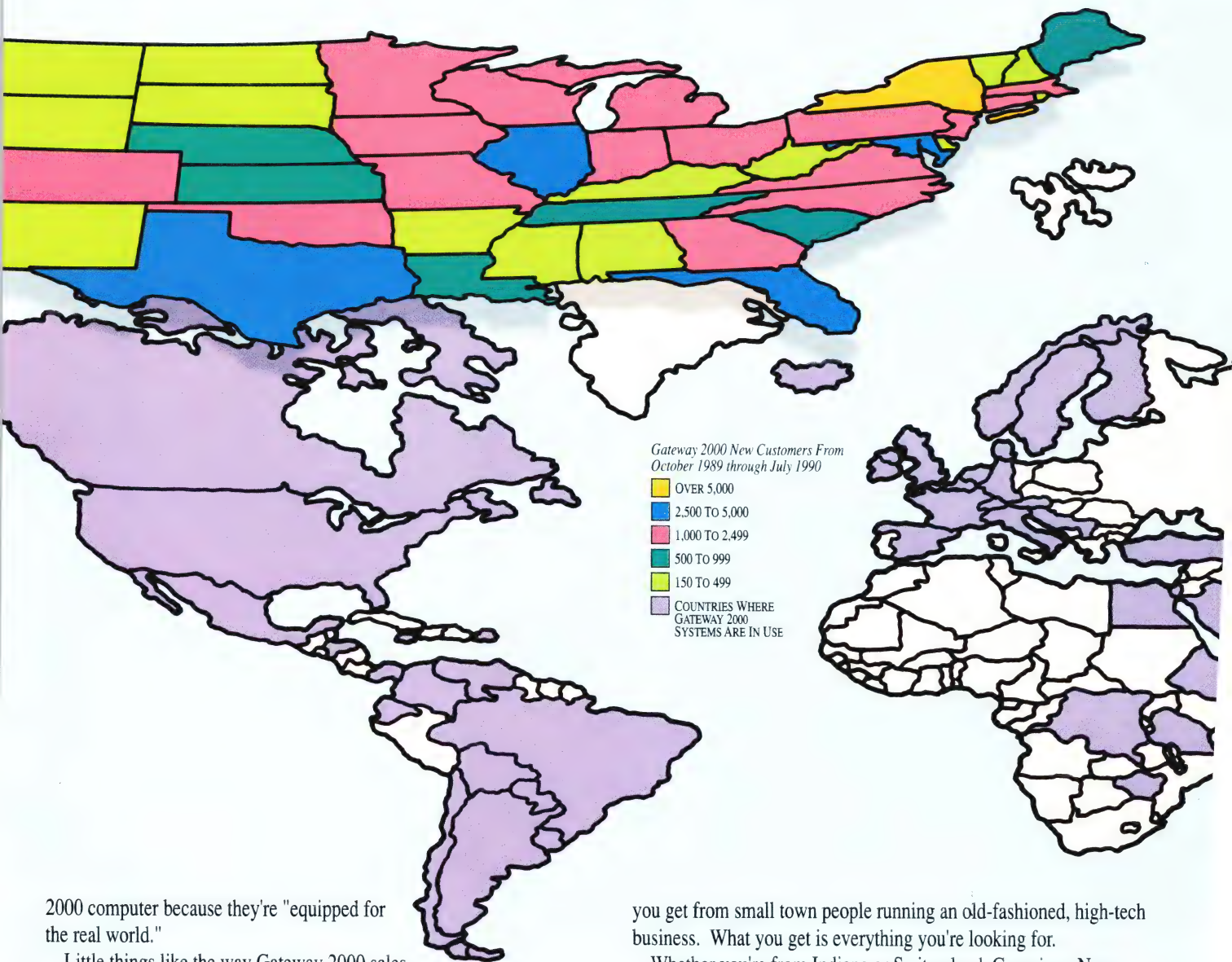
Little things like a positive technical support department. When

Graham Pask told his Gateway 2000 tech rep that his 3 1/2" drive didn't work, he received a new drive the very next day.

Little things like the way Gateway 2000 systems are fully loaded with all the features you want. Jim Rondinelli bought a Gateway



AND AROUND THE WORLD, GATEWAY 2000!



2000 computer because they're "equipped for the real world."

Little things like the way Gateway 2000 sales people develop excellent business relationships with their customers. Fred Gronemeyer tried his first Gateway because he was impressed by his sales person. Eighteen systems later, Fred is still impressed by his sales person.

And the biggest little thing of all is the feeling you get when you deal with the people at Gateway 2000. As Larry Mahan said, "they're honest-to-goodness nice folks."

Compare prices, quality and service. Then add up the little things

you get from small town people running an old-fashioned, high-tech business. What you get is everything you're looking for.

Whether you're from Indiana or Switzerland, Georgia or Nova Scotia, you've got a friend in the business at Gateway 2000.



"You've got a friend in the business."

8 0 0 - 5 2 3 - 2 0 0 0

610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023

GATEWAY 2000 SYSTEMS

12MHZ 286VGA

- 80286-12 Processor
- 2 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 40 Meg 28ms IDE Drive
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

\$1695.00

GATEWAY 386SX

- 2 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 40 Meg 17ms IDE Drive
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

\$1995.00



20MHZ 386VGA

- 4 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 80 Meg 17ms IDE Drive
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

\$2595.00



25 MHZ 386 VGA
\$2695.00

25MHZ 386CACHE

- 64K Cache RAM
- 4 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 110 Meg ESDI Drive
- ESDI Cache Controller
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

\$3395.00



33MHZ 386VGA

- 64K Cache RAM
- 4 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 150 Meg ESDI Drive
- ESDI Cache Controller
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

\$3695.00



25MHZ 486VGA

- 64K Cache RAM
- 4 Megs RAM
- 1.2 Meg 5.25" Drive
- 1.44 Meg 3.5" Drive
- 150 Meg ESDI Drive
- ESDI Cache Controller
- 16 Bit VGA with 512K
- 14" 1024 x 768 Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01
- MS WINDOWS 3.0

\$5295.00

CACHE SPECIAL

■ Same features as our PC Mag Editor's Choice 25 MHZ 386 Cache system except this machine has an 80 Meg 17ms Drive instead of the 110 Meg EDSI Drive.

\$2995.00

STANDARD FEATURES AND SERVICES

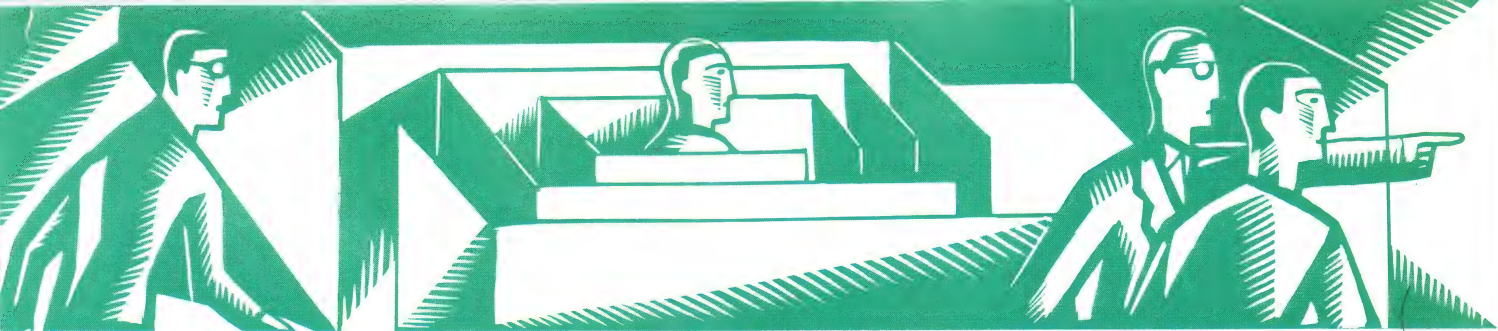
- Microsoft® WINDOWS™ with all 386 and 486 systems
- 30-day money-back guarantee
- One-year warranty on parts and labor
- New leasing options now available
- Toll-free technical support for the life of the machine
- Free on-site service to most locations in the nation
- Free overnight shipment of replacement parts
- Free bulletin board technical support

*If our standard configurations don't fit your needs, we'll be happy to custom configure a system just for you.
Due to the volatility of the DRAM market, all prices are subject to change.*



8 0 0 - 5 2 3 - 2 0 0 0

610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023



THE HELP SCREEN

PC World offers answers and advice at every level

Set up applications for Windows 3.0, use wild cards to select files, set up your system to run programs unattended, swap printer ports, and contemplate the cost of linking remote networks.

Karl Koessel

that match those listed in its internal tables. It can't set up applications it doesn't know about. By default it looks for EXE, not COM or batch files, and it looks only at the file's name (not its contents), believing a matching name identifies a program it knows. However, you can easily set up applications yourself.

You must, of course, first install the application on the hard disk, complete with any necessary drivers, support files, and/or changes to your PATH command. Then read the documentation to learn whether the program is started by running a COM, EXE, or BAT file.

Now run *Windows*, and in the Program Manager window, open (or create) the program group in which you want the new application's icon to appear. Select *File New Program item OK* to bring up the Program Item Properties dialog box. Type in a short description (which will appear just below the icon),

and press <Tab> to move to the Command Line box. At this point you can either click the Browse button and navigate through the directories to locate the start-up file or type the drive, complete path, name, and extension of the file that starts the program. (For example, if you were identifying *Excel's* start-up file, EXCEL.EXE, and had installed the application in a directory named \EXCEL on drive C:, you'd enter `c:\excel\excel.exe.`) Press <Enter>, and the icon for the new application will appear.

Note that you can create several start-up icons for the same program and place them in different program groups. Also, you can omit the drive and path portion of the Command Line entry if the start-up file's directory is listed in the current system PATH. In that case, you can even use the drive and path that you want to be the default (*continues*)

Program Icons in Windows 3.0

Q. I recently installed a new program on my hard disk. To set it up for Windows 3.0, I double-clicked the Windows Setup icon and selected Options Set up applications. Windows searched the disk but didn't recognize my program.

Curious, I looked more closely at the application setup utility and noticed that it ignored a few other programs on my hard disk. Can you explain this and tell me how to make a PIF file and an icon for my application?

Roger Thompson

Santa Monica, California

A. The Set Up Applications utility searches the hard disk for program files

Tame That Hard Disk!



Most software makes it all too easy to store program and data files in the same directory. The result? Big headaches when you need to find important data files, back up subdirectories, or upgrade software. Putting program and data files in separate subdirectories (left) helps keep your hard disk organized and manageable. An even better solution—assuming you have a large enough hard disk—is to create two logical drives (right), one for program files only and one for data files only. Because program files rarely change, you'll usually need to optimize or back up only the logical drive with your data files. Over the course of a year, that can add up to hours of time saved.



WIND-EASE

WINDOWS MADE EASY BY THE WINDOW WIZARD

The Wind•Ease® Program presents the key concepts and functions of Windows 3.0™ in an easy to understand, menu-driven format.

- Wind•Ease provides dramatic insights into the workings of Windows 3.0™.
- Open your windows ...

ORDER TODAY !

Now at an introductory price of only \$49.95* thru Oct. 30, 1990.

For orders only, please call
1-800-277-1379
9am - 8pm EST.

For information and technical support call
813-864-0899.

To Fax your order:
813-864-0788.

*Florida Residents please add 7% sales tax.
*Plus \$5.50 shipping and handling within the US



BLACK ORCHID Software, Inc.

P.O. Box 58098
St. Petersburg, FL
33715-8098

©1990 BLACK ORCHID SOFTWARE, INC.

*WIND-EASE IS A REGISTERED TRADEMARK OF BLACK ORCHID SOFTWARE, INC.
*WINDOWS IS A TRADEMARK OF MICROSOFT CORPORATION.

Circle 40 on reader service card

PC WORLD STEP-BY-STEP GUIDE #3

A Parallel Printer-Swapping Utility

This guide shows you how to create a program that swaps LPT1 and LPT2.

LPT1'S DEFAULT I/O PORT ADDRESS

Before creating SWAPLPTS.COM, you need to learn LPT1's default I/O port address. Place in drive A: a disk that contains a copy of DEBUG.COM (from either the DOS Supplemental Programs disk or the DOS Operating disk) and some free space to hold the printer-swapping program. At the A> prompt, type **DEBUG** and press <Enter>. Then type **D40:8 L2** and press <Enter>. Two pairs of hexadecimal numbers (BC 03, for example) will appear. Write them down on a piece of paper, reversing the order of the two pairs and omitting the space (03BC). Press **Q<Enter>** to quit DEBUG.

THE CODE

Using a line editor or your word processor in ASCII text mode, type the following bold text, pressing <Enter> at the end of each line. Type carefully; it's easy to confuse L's and 1's and O's and 0's.

```
A100
PUSH DS
MOV AX,40
MOV DS,AX
MOV BX,[8]
```

Now type **MOV CX** followed by a comma and the four-character hexadecimal I/O port address that you wrote down during the first step. Press <Enter>. Continue with the following columns, pressing <Enter> at the end of each line.

CMP BX,CX	MOV AX,600	INT 21	JNZ 192
POP DS	MOV BH,16	MOV DX,1CA	PUSH DS
JZ 121	INT 10	MOV AH,9	MOV AX,40
MOV SI,1F4	SUB DL,DL	INT 21	MOV DS,AX
MOV BYTE PTR [SI],32	MOV SI,1F4	MOV DX,1FA	MOV BX,[8]
MOV SI,1FA	MOV DH,[SI]	MOV AH,9	MOV CX,[A]
MOV BYTE PTR [SI],31	SUB DH,31	INT 21	MOV [8],CX
JMP 12D	MOV AH,2	MOV DX,200	MOV [A],BX
NOP	MOV BH,0	MOV AH,9	POP DS
MOV SI,1F4	INT 10	INT 21	JMP 100
MOV BYTE PTR [SI],31	MOV DX,1A0	MOV AH,1	MOV AH,4C
MOV SI,1FA	MOV AH,9	INT 21	INT 21
MOV BYTE PTR [SI],32	INT 21	CMP AL,79	
SUB CX,CX	MOV DX,1F4	JZ 178	
MOV DX,194F	MOV AH,9	CMP AL,59	

THE REPORT AND PROMPT TEXTS

Press <Enter> again to create a blank line, and type the bold text below, pressing <Enter> at the end of each line. The number of characters must not change; type a single space between words only where indicated. Note also that there is a space before the final double quotes on the fourth, fifth, and ninth lines. The names **PRINTER_1** and **PRINTER_2** may be replaced by more descriptive monikers (for example, EP-SONFX80 and SERIES II) for your printers, but you must use exactly the same number of characters, including spaces.

E1A0 "The PRINTER_1 pr"	E1FA "#:,"D,A,"S"
E1B0 "inter is connect"	E200 "Do you want to s"
E1C0 "ed to LPT\$The PR"	E210 "wap the printers' "
E1D0 "INTER_2 printer "	E222 "port assignmen"
E1E0 "is connected to "	E230 "Is? \$"
E1F0 "LPTS#:"D,A,"S"	

Now press <Enter> to create a second blank line, and type the following, pressing <Enter> as indicated.

RCX<Enter> 135<Enter> NSWAPLPTS.COM<Enter> W<Enter> Q<Enter>

Save the file on drive A: as unformatted ASCII text, calling it **SWAPLPTS.DBG**.

DEBUG CREATES SWAPLPTS.COM

At the A> prompt, type **DEBUG <SWAPLPTS.DBG** and press <Enter>. This command will "feed" DEBUG the keystrokes stored in SWAPLPTS.DBG, creating SWAPLPTS.COM on the disk in drive A:. Copy the COM file to a directory that's listed in your system's PATH so you can use it whenever you want.

Platinum has extraordinary speed, super power, and supports any number of businesspeople.

If you're looking for the best accounting and management information system, test drive The Platinum® Series from IBM. You'll be awed by its performance.

Platinum is like lightning. But to fully appreciate its speed, you should see how swiftly it handles vast amounts of information. And all the information is maintained on-line and with great safety.

Platinum is ideal for single-user environments, but it easily grows with your business to accommodate any size network. The whole office can take advantage of Platinum power, especially now, with its easy-to-use bounce menus and zoom windows.

From simple bookkeeping to advanced managerial accounting, Platinum is a comprehensive software system. Start with one module and add any of the remaining

15 as required. Whether it's General Ledger, Job Cost or Accounts Receivable, all modules are fully integrated, so figures generated in one automatically transfer to the others.

Platinum comes in DOS, OS/2®, and LAN versions, and there are endless ways you can tailor it to your specific accounting needs.

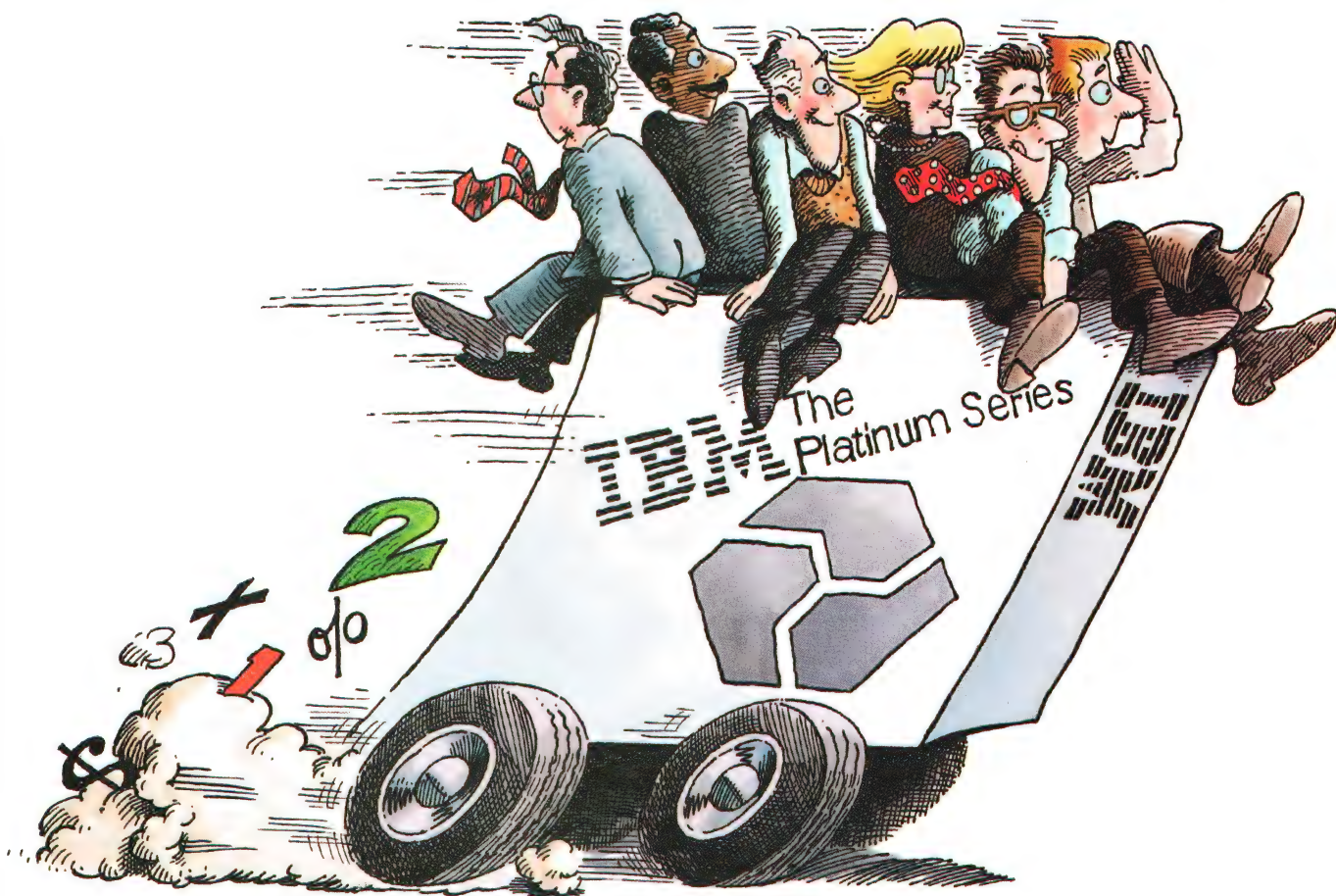
It's no wonder *PC Magazine* picked The Platinum Series as Editors' Choice for networked accounting software.

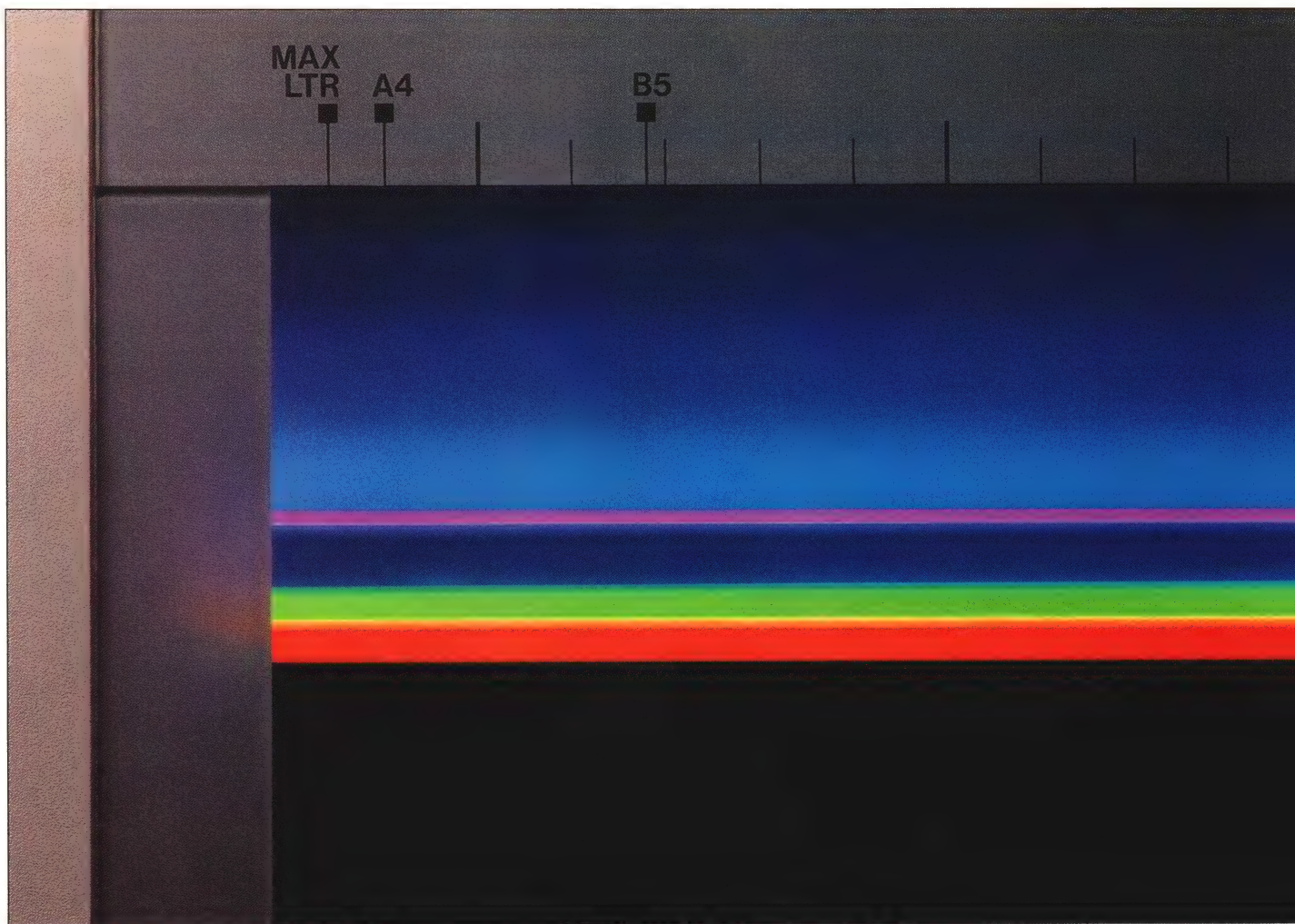
Make The Platinum Series from IBM your choice, too. To find out more, call 1 800 IBM-7699, ext. 995.

Platinum can put your business in the fast lane.



September 26, 1989
Platinum Series, Version 6.0





When we sat down to all the lights c

Accurate color scanning seems a simple enough goal. Yet in a flash of engineering brilliance, Epson® designers have raised the standard by creating the ES-300C color scanner.

Using three separate light bars, Epson's innovative TruePass™ scanning system, does in one pass what most other

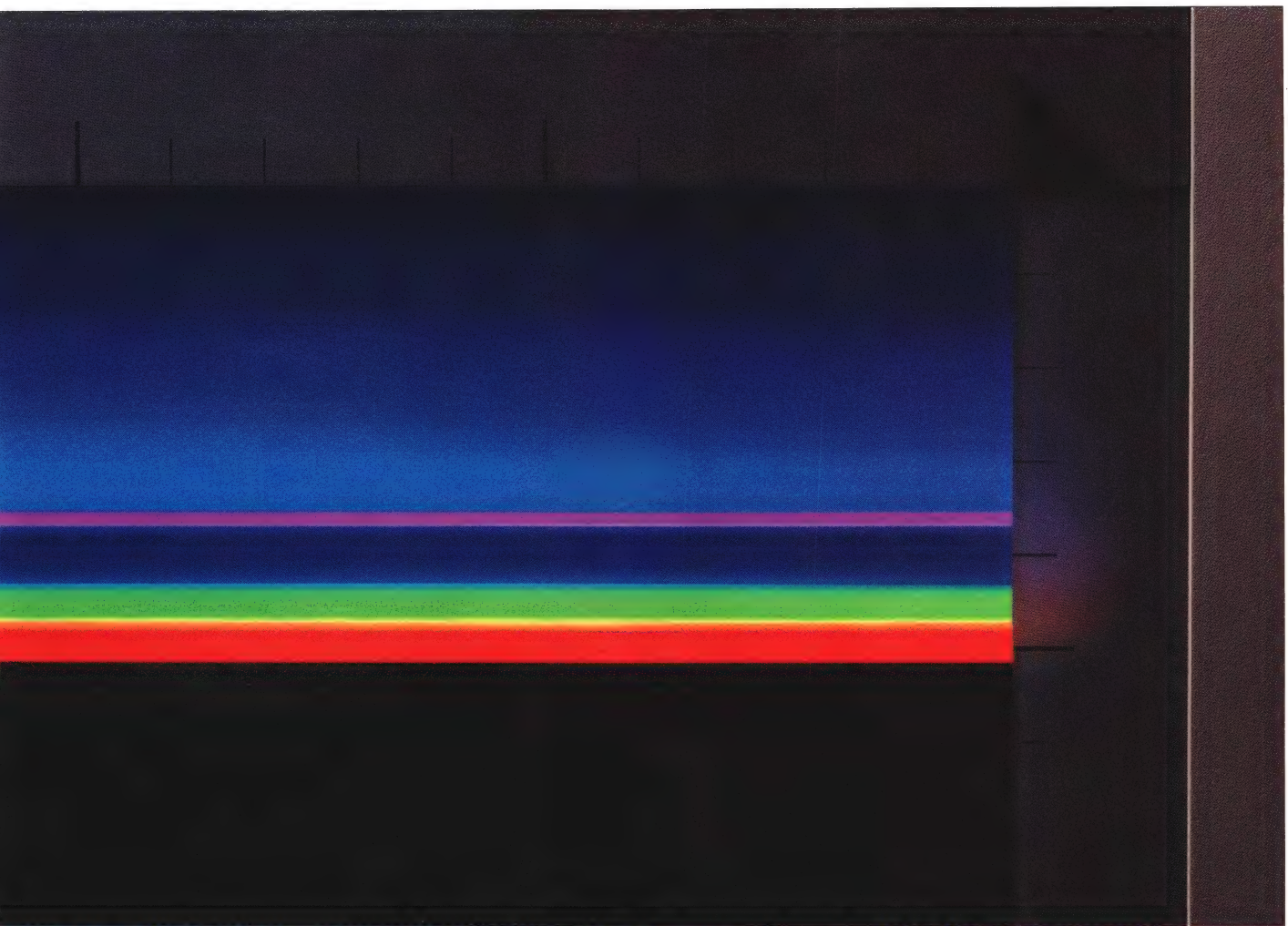
color scanners require three passes to accomplish.

The result is more precise images in less time. Gone are registration difficulties, poor fidelity and color dropout.

*The new EPSON ES-300C
is both MS-DOS and
MACINTOSH compatible.*

The ES-300C is as impressive in black and white or grayscale as it is in color. 256 shades of gray complement 16.8 million colors. Resolution settings can be





design a better scanner, came on at once.

adjusted between 50 and 600 DPI to optimize output from any printer, or to any monitor. Compatibility is assured with a choice of easily installed MS-DOS® or Macintosh® interface kits, featuring the latest industry-leading scanning and editing software.

With a price as attractive as its image would suggest, the full color ES-300C costs about the same as most black and white scanners.

A demonstration of the Epson ES-300C will be an illuminating experience. Other scanners simply pale by comparison.

Engineered For The Way You Work.™

EPSON

directory when the application starts. Because *Windows* can't find the start-up file in the specified directory, it will give you a warning message stating that the path is invalid. Just select *OK* to tell *Windows* you want that directory to be the default for this application.

The Wild Side of DOS

Q. *There's probably a simple answer to this question, but I can't figure it out. Suppose that I have the files XX90.WK1, XX89.WK1, QU90.WK1, and QU89.WK1 in a directory, and I want to copy only the files with 89 in their names to a floppy disk. But the command COPY *89.* A: gives me the same results as COPY *.* A:. Why doesn't it work the way I want it to? I thought the purpose of the DOS wild-card character was to make selecting a group of files easier.*

Mark W. Schurmann
Decatur, Georgia

A. DOS has two wild-card characters. The asterisk represents any string of up to eight characters, so COPY *ANYTHING.* A: is the same as COPY *.* A:. You need to use the question mark, which represents any *single* character, as in COPY ??89.* A:. Note that this command will copy files that have any extension, but the file name must consist of exactly four characters with 89 as the third and fourth; it will not copy X89X.WK1 or 89QU.WK1, but it will copy XX89.BAK and ZZ89.WK1. Before you COPY or DEL (ERASE) files using wild-card characters, always issue a DIR command using the wild-card expression (as in DIR ??89.*) to see which files will be selected.

Sleep and Boot

Q. *I need a memory-resident program (TSR) that will automatically reboot a system at a specified time.*

Our network has a communications

server that links us to a mainframe. The mainframe reboots itself automatically at 3 a.m., severing the link to our comm server. We have been manually relinking the comm server; but with a utility that would reboot the comm server at 3:15 a.m., we could automate the process. Can you tell me if there is such a product?

Norma A. Vasquez
Van Nuys, California

A. You can use *Auto-Might* to schedule up to eight time slots during which a macro of up to 210 keystrokes can run. The activities can be set to occur once, daily, weekly, monthly, or even daily excluding weekends. The scheduled macros can launch batch files, execute DOS commands, or run menu-driven applications.

The more powerful (and more expensive) *Automate/Anytime* works similarly and includes a keystroke recorder and a "Smart Dates" feature, which al-
(continues)

Alpha Four Is the Best Relational Database for Non-programmers.

With its relational skills, custom menus, and top-notch screen and report generators, Alpha Four wins the Best Buy.

- PC World, March 1990

NOW IT'S OFFICIAL!

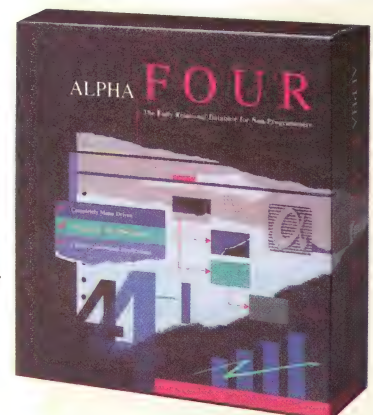
In the March 1990 issue, **PC World** tested several database management software packages, including products such as Q&A 3.0®, Reflex®, FormBase® and Alpha Four™. The results confirmed that there is only **one** product worthy of the coveted Best Buy award.

Infoworld, Data Based Advisor, and PC Magazine agree. If you're a non-programmer, you can do more with Alpha Four than with any other database program - guaranteed or your money back. Quite simply, Alpha Four is the best data management and application development system available for business people today. (Runtime version available)

Give us a call at 1-800-451-1018 Ext. 117
We'll send you a free Alpha Four trial pack.
See for yourself why Alpha Four is the best.

All trademarks are registered with the appropriate companies.

The Fully Relational Database for Non-Programmers.



ALPHA
SOFTWARE CORPORATION
One North Avenue, Burlington, MA 01803, 617-229-2924

EXECUTIVE SUMMARY
Alpha Four 1.0
Nonprogrammable data manager

BEST BUY

Combining an approachable interface with a rich array of features, dBASE file compatibility, and excellent relational skills, Alpha Four is a system you can grow with.

	POOR	FAIR	GOOD	EXCELLENT
Relational skills				●
Design and data entry				●
Search, sort, and query				●
Reporting				●

**YOUR \$3600
LASER PRINTER
JUST CHOKED ON A
2¢ TYPEWRITER
LABEL.**

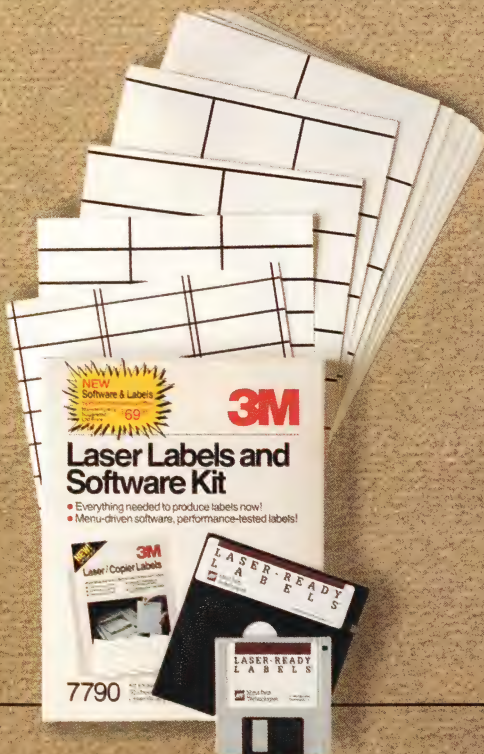
We invented our new 3M Laser Labels and Software Kit in order to keep a simple little thing from messing up a piece of fancy technology.

Just load the 3M labels into your laser printer. The special liner ensures they won't slip or jam. And with 12 convenient sizes to choose from, you can be sure there's one that's just right for you.

The kit's software is easy to use too. Easy-to-follow instructions and simple screens

guide you through the program. And you'll have a variety of fonts.

Try 3M's new Laser Labels and Software Kit. It'll keep your laser printer from getting all choked up. Get them from your office supply store, or call 1-800-328-1684, ext. 9.





HEAVY PROBLEMS ARE BEST HANDLED BY PEOPLE THAT CAN MAKE LIGHT OF THEM.

THE 386 SERIES

Today's business-computer users face a myriad of problems. Cost accounting and business analysis. Computer-aided design. Management of corporate data. Production of presentation materials. And work-group networking.

The Hyundai® 386 Series personal computers have the power to make light work of the heaviest problems.

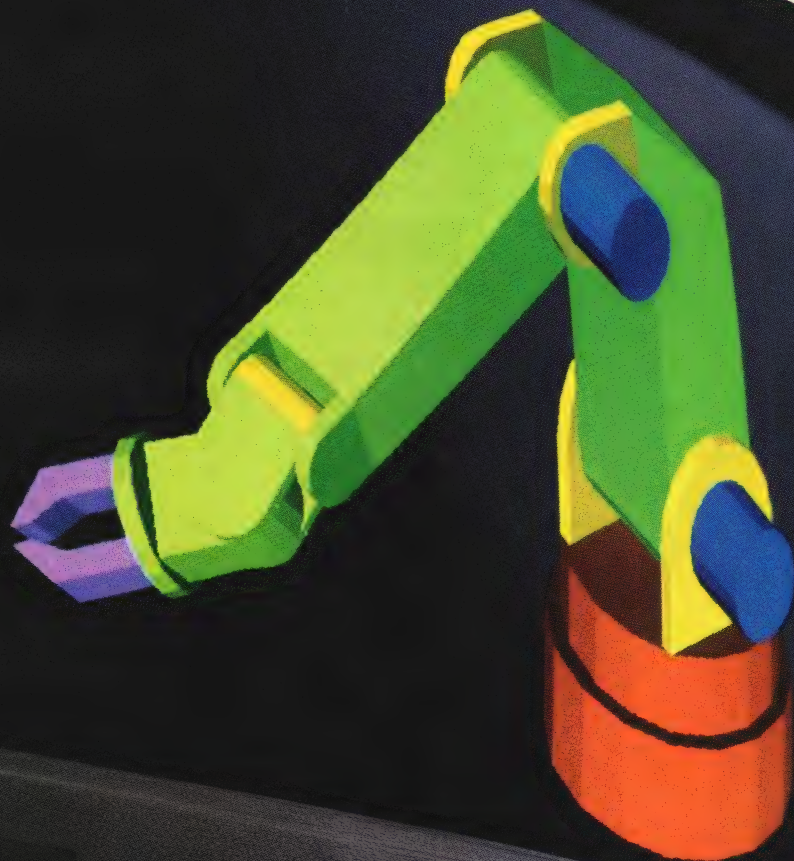
From the 16 MHz Super-386S to the 33 MHz Super-386T, Hyundai offers four MS-DOS®, Windows™ and OS/2® compatible desktop computers designed to meet the needs of even the most demanding business user.

Hyundai's 386 Series computers—configurable to meet the needs of any business application—have earned an outstanding reputation as high-quality computer systems. A reputation that's backed by an eighteen-month warranty, a hand-picked nationwide network of dealers, and an optional 24-hour "Service-on-Site" program.

The 386 Series from Hyundai is the high-value solution. And the best way to make light of heavy problems. Hyundai Electronics America, 166 Baypointe Parkway, San Jose, California 95134.



Hyundai and both MS-DOS and OS/2 are registered trademarks of Hyundai Electronics Industries Co. Ltd. and Microsoft Corp., respectively. Windows is a trademark of Microsoft Corp.



1-800
727-
6972

HYUNDAI

I N F O R M A T I O N S Y S T E M S

Circle 90 on reader service card

NETWORK Q&A

T1 Links and Remote Data Base Access

David Ferris

Q. We have a 30-workstation network at our headquarters in Oakland, California, and a 10-PC local area network (LAN) in our New York sales office. Sales staff periodically need to access up-to-date customer and inventory information located in Oakland using a custom Paradox application. We currently use dial-up lines for E-mail, but I understand we probably need a fast leased data line, known as a T1 link, for data base applications. Is this true, and what will a T1 cost us?

H. Graves

San Francisco, California

A. You're right—remote data base applications do require a high-speed link (see last month's "Network Q&A"). However, they're expensive; using remote control software, such as *Carbon Copy*, often works out to be a lot cheaper. You appear to have four options: Use a T1 link, use a "fractional T1" link, download files periodically over a regular phone line, or connect to the LAN with remote control software over a regular phone line.

Most wide area network (WAN) applications such as E-mail work well with line speeds of up to 64 kbps, but remote data base access is an exception. Today's data base management software requires frequent file swaps between workstation RAM and the data base directory at speeds between 1 and 8 mbps. If the directory is remote, clearly you need a fast WAN link.

The T1 Solution. A T1 link is a 1.544-mbps point-to-point connection provided by a common carrier such as AT&T. The carrier installs end wires at both locations, and you install an AT-

class machine as a communications server on each LAN. Both servers need a specialized adapter and control software, plus a connection box similar to a modem called a CSU/DSU, to which the T1 wiring is attached. To access inventory information, users simply connect to the remote site using the appropriate LAN operating system commands, map the remote directory to a logical drive, and run *Paradox* locally.

Installation costs are approximately \$9870 for each location: communications server PC \$1700; CSU/DSU \$1000; network cable and installation \$250; network adapter \$500; DOS \$120; T1 communications adapter and software \$6000; T1 line installation \$300.

And now for the real kicker—your monthly rental fee for unlimited use of the line. This depends on the distance. For a 50-mile link, you'd pay around \$1000 per month. For the 2600 miles between Oakland and New York, the charge would be about \$25,000 per month.

Fractional T1. You can rent T1 lines that use slower speeds, such as 768, 512, and 384 kbps. These lines use the same T1 hardware, and monthly charges are about \$12,000, \$8000, and \$7000, respectively. Data base applications will work, although sluggishly, at these slower speeds.

Periodic File Download. Here you transfer your data base files between Oakland and New York only occasionally—perhaps as an E-mail attachment. Remote users then run their data base applications against these local file copies. Later, you transfer file updates back to the central data base. The advantage to this approach is that you can use normal, inexpensive phone lines. However,

if you need up-to-date access to a single centralized data base, this approach is not acceptable.

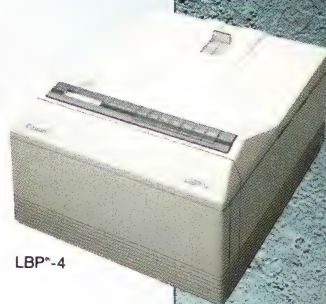
Remote Control. Probably the best method is to let the New York sales staff use terminal emulation to link to a "remote host" PC in Oakland that actually runs their data base application. The host machine needs an asynchronous modem and a dial-up line, plus remote control software such as *Carbon Copy*, *Co/Session*, *pcAnywhere*, *Remote2*, or *Takeover*. Any of these packages will work well enough for your application—ask your dealer to demonstrate them so you can see which one you like. Also install the software and modems in the New York PCs that need access to the Oakland inventory data base, and give them telephone lines.

Suitably equipped, each host costs about \$3700 list (see "Network Q&A," April 1990). To upgrade a remote PC with a modem and software costs less than \$900.

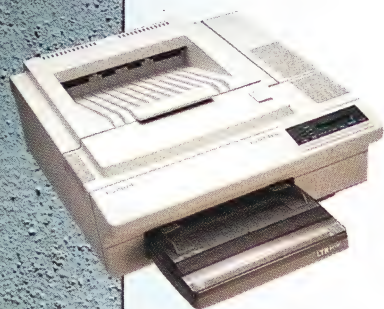
So suppose you need remote dial-up capability for six workstations and two hosts, allowing up to two concurrent dial-in sessions. Also suppose you will use an average of 9 connect hours per business day. Total installation costs will be around \$12,800 (\$3700 twice plus six times \$900). Line charges are around \$15 per hour during business hours, amounting to monthly connection fees of \$2835.

To sum up, the remote control approach is much cheaper than using T1 or fractional T1 links unless your dial-up charges are very high. For example, for several sales representatives periodically accessing the remote data base, (continues)

FREE



LBP-4



LBP-8 Mark III™

SCALABLE

FONTS



LBP-8 Mark III R™



LBP-8 Mark III T™

Improving your image was never so easy.

Imagine being able to produce the kind of documents that impress clients, turn heads at meetings, and make your competitors jealous. When you have a Canon Laser Beam Printer with nine built-in scalable fonts, you can.

Scalable fonts give you unprecedented printing versatility. You can create type big enough to fill a page with a single letter. Or small enough for footnotes and captions.

You can even mix several fonts on a page, rotate letters or whole blocks of text, add shadows for drama, and print letters with patterns instead of black.

And all without juggling a single font card or using up valuable disk space.

Best of all, when you buy any Canon Laser Beam Printer from September 1 through December 31, 1990, you'll also get a \$195 SC-I™ IC Card, which offers you the added versatility of 22 more scalable fonts. And the charge? Zippo.

So not only is improving your image easier than ever before, it's a lot more economical, too.



Plus, a free driver kit containing all current printer definition files with complete installation instructions for most popular software is also available.

Canon
LASER BEAM PRINTERS

Working To Improve Your Image.™

Call 1-800-848-4123 for more information.

Some printer functions may require memory upgrade.
Offer valid in USA only. Void where taxed, restricted or prohibited by law. Purchases must be made September 1 through December 31, 1990. All claims must be postmarked by January 31, 1991.
Canon® and LBP® are registered trademarks and SC-I, Mark III, Mark III T, and Mark III R are trademarks of Canon Inc. © 1990 Canon U.S.A., Inc.

Circle 47 on reader service card

NETWORK Q&A

(continued)

averaging a total of 4 hours per day in communications charges, you would pay roughly \$1300 per month for dial-up links versus \$25,000 for a T1 link. T1 will start to make sense when you need about ten nonstop lines; chances are, you're a long ways from that. Consider fractional T1s if your monthly dial-up charges creep up to \$5000 per month.

David Ferris is president of Ferris Networks, a San Francisco-based consulting firm specializing in networks.

For more information about all products in this item, circle reader service no. 906.

WHERE TO BUY

Carbon Copy Plus

Microcom Software Division
500 Ridge River Dr.
Norwood, MA 02062-5028
800/842-1863, 617/551-1021 (fax)
LIST PRICE: \$199

Reader service no. 655

Co/Session

Triton Technologies
200 Middlesex Turnpike
Iselin, NJ 08830
201/855-9440, 201/855-9608 (fax)
LIST PRICE: \$249 (for two PCs)

Reader service no. 656

pcAnywhere

Gateway Communications
2941 Alton Ave.
Irvine, CA 92714
800/367-6555, 714/553-1555,
714/553-1616 (fax)

LIST PRICE: stand-alone versions II and III \$95 and \$145, respectively; network version (NetWare Anywhere) available only through Novell

Reader service no. 657

Remote2

DCA/Crosstalk Communications
1000 Alderman Dr.
Alpharetta, GA 30201-4199
800/241-4762, 404/442-4500,
404/442-4368 (fax)
LIST PRICE: \$195

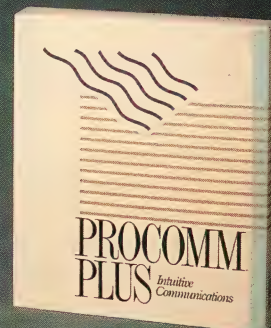
Reader service no. 658

Takeover

SoftKlone
327 Office Plaza Dr. #100
Tallahassee, FL 32301
800/634-8670, 904/877-9763 (fax),
904/878-8564
LIST PRICE: \$295

Reader service no. 659

One communications software package stands alone in power, ease of use and affordability.

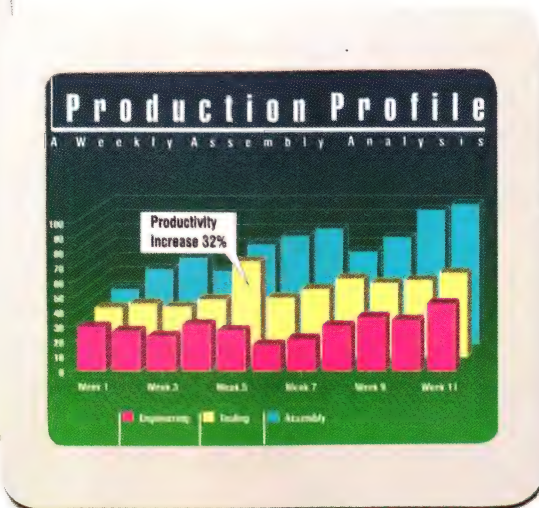
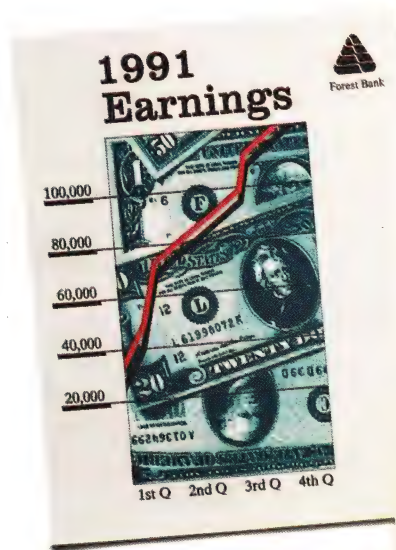


The new standard in communications software.

DATASTORM
DATASTORM TECHNOLOGIES, INC.

P.O. Box 1471 Columbia, MO 65205 314.443.3282

Applause.



Bravos. Cheers. Hurrahs.

We found APPLAUSE II to be easier to work with than either Harvard Graphics or Freelance Plus, and faster than the Windows-based products.

INFOWORLD
JUNE 11, 1990

APPLAUSE II handles charting, drawing, and on-screen presentations with a fluidity and ease-of-use not found in either Harvard Graphics or Freelance Plus—and it does all this in a mere 512K.

PC MAGAZINE MARCH 13, 1990

PC/COMPUTING APRIL 1, 1990

It's graphical. It's interactive. It makes excellent use of the mouse. Best of all, it abandons the stodgy fill-in-the-form approach to creating charts that is used by Freelance, Harvard and 35mm Express.

The critics are raving about its ease-of-use and intuitive "Windows"-like interface. And how APPLAUSE II™ turns data into 37 different chart types automatically. In black and white or 3.6 million colors. Creating everything from dazzling overheads, slides and on-screen presentations to



high-impact hard copy.

To find out more, call 1-800-437-4329 ext. 1308 for a free video and eye-opening demonstration disk.*

And see why the critics are giving APPLAUSE II a standing ovation.

Ashton-Tate®

lows you to have the macro dynamically alter dates during playback so that, for example, a macro run on the first of the month can refer to the first day of the

preceding month.

Both of these programs are TSRs. In the unlikely event that your comm server isn't being used at night, however, you

can use a utility called WAIT.COM in a batch file instead—as long as you remember to run it every night before you leave. WAIT causes the batch file to pause until some specified time within the next 24 hours before executing the next batch file command. For example, a batch file with the two commands WAIT 3:15:00 and REBOOT would solve your problem by relinking the comm server at 3:15.

WAIT.COM and rebooting utilities (under names like REBOOT.COM, WARMBOOT.COM, and so on) can be found in several variations on almost every BBS. (On CompuServe, type **go ibmsys**, press <Enter> twice, press **3<Enter>** for Libraries, **1<Enter>** for DOS Utilities, **1<Enter>** to Browse, and use **wait** or **boot** for the keyword.) You can also find instructions for creating your own REBOOT.COM at the end of the "PC World Step-By-Step Guide #2" in last month's issue.

(continues)

POWER TIP NO. 133

Choose Your Files in Windows 3.0

It's often useful to select multiple files from a File Manager directory window. For example, you can choose a group of temporary files and then press <Delete> to erase them. Or you can click and drag selected files to copy or move them to other directories. When you click the left mouse button to select an individual file, any other selected files are automatically deselected. To select more than one file, you must hold down the <Ctrl> key after selecting the first file while you use the mouse to click on the other file names. To select a consecutive subset of file names, select the first name, then hold down the <Shift> key and click on the last name. This trick takes practice, but after you get the hang of it, you can select sets of files in a jiffy.

Tom Swan
Contributing Editor

ALL THE FAX AND ANSWERS AUTOMATICALLY.

I-Line™ from ACCO. It operates your answering machine, fax and modem on the same line, routing calls to each, automatically. I-Line saves you money automatically too, eliminating the need for dedicated phone lines. And it saves you time. You install it yourself in minutes. I-Line. Part of a full line of money saving telecommunications and fax support products from ACCO.



MAKING YOUR WORK PLACE A BETTER PLACE TO WORK.

ACCO 2-Clean fax cleaning products and 4-Fax™ modular furniture.



© 1990 ACCO Swingline

EXTRA!

EXTRA!

MoreFonts®

VOLUME 1 NUMBER 1

17 TYPEFACES AND MUCH MORE

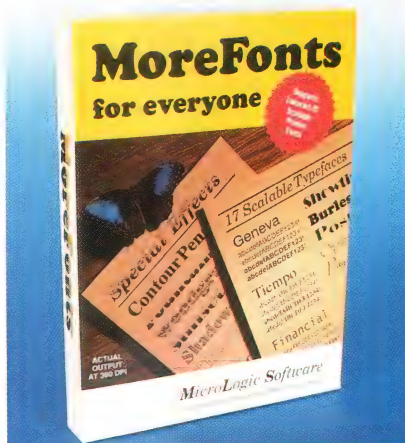
Get More Fonts For Less

EMERYVILLE, CA—MicroLogic Software has released Version 2.0 of MoreFonts; its popular font design and generation program. MoreFonts helps you create thousands of typefaces for use with the most popular PC word processing and desktop publishing programs. It includes 17 typefaces with 40 symbol sets containing legal, international, and graphic characters. All font selections can be previewed on screen.

On-The-Fly Scaling

The new release adds "on-the-fly" downloading of fonts directly to your printer when using WordPerfect or Microsoft Word, to save hours of time and megabytes of disk space. "MoreFonts loads requested fonts directly into the LaserJet, thereby avoiding the hassle of selecting and making separate bitmapped fonts in advance," explained Frank Hainze, president of MicroLogic Software. "Just select any size font from within your application, choose the shading or special

effect, and then print. MoreFonts provides more scaling capabilities than either a



LaserJet III or a PostScript printer — for all the HP compatible lasers."

Fonts for Windows 3.0

MoreFonts provides quick installation for WordPerfect 5.01/5.1, Microsoft Word 4.0/5.0, MultiMate 4.0, XyWrite III Plus, Xerox Ventura Publisher 1.1/2.0, First Publisher 2.0/2.1, and all applications under Windows 2.0/2.1/3.0 including PageMaker, Excel, Ami, etc. For Windows applications, Word Perfect and Microsoft Word, MoreFonts supports bitmap as well as scalable printer fonts, with matching screen fonts.

LaserJet III Support

MoreFonts generates the largest fonts your printer can print (from 2 to 999 point) in the highest resolution possible (300 dpi) on the popular Hewlett-Packard LaserJet III, IIP and IID printers. It also supports the LaserJet Series II, 2000, Plus, 500 Plus, DeskJet, DeskJet Plus, and Dot-Matrix printers (for First Publisher). MoreFonts runs on any IBM PC, XT, AT, PS/2 or compatible with at least 384K bytes of memory, DOS 2.0 or later, and a hard disk.

Thousands of Special Effects On Exhibit

LOS GATOS, CA—Thousands of special effect fonts, created with MicroLogic Software's MoreFonts font generator, went on exhibit today.

"Once you've selected a typeface, you can specify over 50,000 combinations of point size, pattern, outline, shadow, orientation

and symbol set," said Dick Brown, president of Brown-Wagh. "So when black type isn't enough, you can combine your choice of 6 outlines, 8 shadows, 27 fill patterns, and 28 background effects for eye-catching variety. You can use a touch of conservative gray or a splash of something really wild."



Critics Say "Thumbs Up" to MoreFonts



Dale Lewallen, PC Week

"MoreFonts could be a one-stop shop for most users. By providing automatic font installation for several different applications, a surfeit of special effects, 40 symbol sets and a good selection of typefaces, the package earns a high rating for value."

David Dean, PC Publishing

"MoreFonts wins on speed hands down. The typefaces included are comparable with typefaces costing more than eight times as much."

Mark Brownstein, InfoWorld

"Even if the fonts weren't so good, MoreFonts would be a great way to experiment with fonts. With the outstanding quality, it's an even better deal."

David Dean, PC Publishing

"Finally the ease of use of MoreFonts should make this a good choice for those just learning about their LaserJet or compatible printer; advanced users will find this package suits all of their font needs."

Benchmarks, LaserJet Journal

"MoreFonts is the overall winner of the seven font generators we tested..."

BENCHMARK TEST RESULTS					
Rank	Product	Speed	Font Qty.	Features	Total
1	MoreFonts	7	5	6	18
2	Font Solution Pack	2	6	7	15
3	Type Director	6	4	4	14
4	Glyphix	3	7	3	13
5	Fontware	5	3	2	10
6	Digi-Quilt	1	1	5	7
6	FontMaker	4	2	1	7

Reprinted from JAN/FEB '90 LASERJET JOURNAL

ONLY \$149⁹⁵

ORDER YOURS TODAY!

Available thru your local dealer or call

*Brown
Wagh*

800-451-0900 408-378-3838
(outside CA) (inside CA)

130-D Knowles Drive
Los Gatos, California 95030

*MoreFonts is a registered trademark of MicroLogic Software, Inc. Other brand and product names are trademarks of their respective companies.

BusinessWorks

Manages Your Books



While You Manage Your Business

Whether your company sells bicycles... services cars... or designs buildings...you didn't go into business to manage your books - but we did!

Now you can concentrate on growing your business, and forget the heartburn of managing the books. It's simple. Just get BusinessWorks - the integrated accounting system designed for small and medium-sized companies that are run by busy people like you...who want to manage their business, not their books.

BusinessWorks is easy to learn and use, powerful, flexible, and includes practically every report and feature small and medium-sized businesses will ever need.

And the best just got better! BusinessWorks Version 7.0 supports multiple users, allows you to transfer data to and from other programs, maintains up to 24 months of journal detail, and more.

In fact, there's lots more. Call our toll-free number for a free demo disk and the location of your nearest dealer. See for yourself why the critics have given BusinessWorks their highest marks.

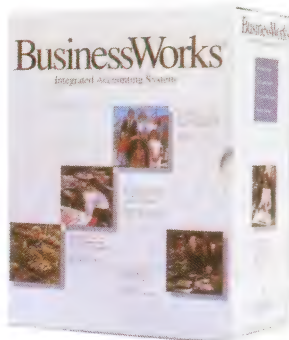
BusinessWorks. Integrated accounting software that manages your books, so you have time to manage your business.

The critics love it!

Best Buy 1989
-PC World

Best in Its Class 1988
-InfoWorld

#1 Overall 1988
-Software Digest



Test drive BusinessWorks for just \$19.95!

Call now for details

800/531-3552 • 800/447-5700 (CA)

Manzanita

SOFTWARE SYSTEMS

Circle 169 on reader service card

THE HELP SCREEN

WHERE TO BUY

Automate/Anytime

Complementary Solutions
4470 Chamblee-Dunwoody Rd. #202
Atlanta, GA 30338
404/454-8033, 404/452-8862 (fax)
LIST PRICE: \$149

Reader service no. 601

Auto-Might

The Pendulum Group
333 W. Hampden Ave. #1015
Englewood, CO 80110
303/781-0575, 303/761-2440 (fax)
LIST PRICE: \$99

Reader service no. 602

Swapping Printer Ports

Q. I have two printers connected to parallel ports LPT1 and LPT2, respectively. Some of my applications let me choose either a "parallel" or "serial" printer, but the parallel option selects only LPT1. At times, I'd like to print from these programs to my laser printer on LPT2. DOS's MODE command can redirect parallel port output to a serial port but can't redirect it to a different parallel port. Any suggestions on how I can get these programs to print to the laser printer on LPT2?

Janet A. Carra

Soldotna, Alaska

A. Instead of teaching your LPT1-only applications to recognize LPT2 (no easy task), you can have a simple DOS program swap the port assignments: Your laser printer's port will be LPT1, and the other printer will be connected to LPT2. Running the program a second time resets the port assignments.

All the program has to do is swap the values in one pair of bytes for those in another pair. Check out this month's "PC World Step-By-Step Guide" to learn how to create the port-swapping program, SWAPLPTS.COM.

How does...? What can...? Should I...? Send your PC questions to The Help Screen; for details see How to Contact PC World, page 4. ☺

FINALLY. A COMPUTER COMPANY WITHOUT THE PUSHY SALESPEOPLE.

Dell's new free catalog has everything you need to buy a computer, except pushy salespeople. It tells you about

services, and reasons we've won eight out of eight *PC Week* Polls of Customer Satisfaction for personal computers.

TO ORDER, CALL NOW. 800-873-1130 IN CANADA, CALL 800-387-5752 FOR NETWORKING/UNIX*INFO 800-678-UNIX HOURS: 7 AM-7 PM CT M-F 9 AM-4 PM CT ON SAT.

our new
computers,
prices,



Call (800) 873-1130 now or
return this card today. In Canada,
call (800) 387-5752.

GET OUR FREE CATALOG NOW.

Return this postage-free card and we'll mail you the new Dell Catalog with information on our new high-performance i486™ EISA-based systems. Plus, information on our award-winning laptop, 286 and 386™ SX and 386 systems.

☐ Please have a Dell Representative call me.

Name: (M) _____
Please Print
 Title: _____
 Company: _____
 Address: _____
If Applicable
 City: _____ State: _____ Zip: _____
 Type of Business: _____
 Approx. # of Employees in Company: _____
 Home Phone: () _____
 Business Phone: () _____
 Fax #: () _____

- Which products are you most interested in?
☐ 286-based systems ☐ UNIX®based systems
☐ 386-based systems ☐ Laptops
☐ 386SX-based systems ☐ Other: _____
☐ 486-based systems
- Are you interested in computer products for:
☐ Home ☐ Business ☐ Resale
- How many PCs does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		
- What do you plan to use computer products for?

5. How many PCs do you have installed now at your company?

6. Are you interested in leasing? ☐ Yes ☐ No

AD CODE 51D19

GET OUR FREE CATALOG NOW.

Return this postage-free card and we'll mail you the new Dell Catalog with information on our new high-performance i486™ EISA-based systems. Plus, information on our award-winning laptop, 286 and 386™ SX and 386 systems.

☐ Please have a Dell Representative call me.

Name: (M) _____
Please Print
 Title: _____
 Company: _____
 Address: _____
If Applicable
 City: _____ State: _____ Zip: _____
 Type of Business: _____
 Approx. # of Employees in Company: _____
 Home Phone: () _____
 Business Phone: () _____
 Fax #: () _____

- Which products are you most interested in?
☐ 286-based systems ☐ UNIX®based systems
☐ 386-based systems ☐ Laptops
☐ 386SX-based systems ☐ Other: _____
☐ 486-based systems
- Are you interested in computer products for:
☐ Home ☐ Business ☐ Resale
- How many PCs does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		
- What do you plan to use computer products for?

5. How many PCs do you have installed now at your company?

6. Are you interested in leasing? ☐ Yes ☐ No

AD CODE 51D19

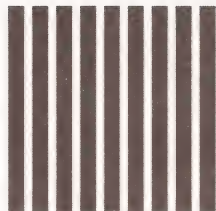
WE'RE GIVING AWAY THE STORE.

For A Free Catalog Of
Dell's New Computers, Send This Card.



386 and i486 are trademarks of Intel Corporation. UNIX is a registered trademark of AT&T in the United States and other countries.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

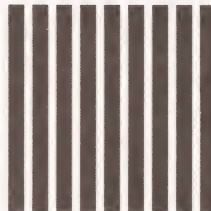
FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD
AUSTIN TX 78759-9860



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
DEPT DH
9505 ARBORETUM BLVD
AUSTIN TX 78759-9860



**DELL INTRODUCES A
NEW LINE OF COMPUTERS
SO YOU'LL NEVER HAVE TO BUY
HIS SAME OLD LINES AGAIN.**



If all you're looking for is a cheap 386™ system you won't be disappointed. You'll get a cheap 386 system. Probably with marginal service. From a computer company that was born yesterday.

On the other hand, if you want a 386 system from a worldwide company that provides instantaneous service, and has won 8 of 8 PC Week Corporate Satisfaction Polls for PC's, call Dell.

The clincher is, you'll spend roughly the same for a great Dell™ 386 PC as a cheapo 386 PC.

**GREAT COMPUTERS,
GREAT SERVICE,
GREAT REPUTATION,
GREAT PRICES.**



Our new 386 systems even pull a fast one on pricier computers. Both the 25 MHz Dell System® 325D and 33 MHz Dell System 333D are faster and

more expandable than most higher priced systems.

Each holds up to 16

MB of RAM on the system board. Which keeps all six slots free for expansion cards—enough for even the most peripheral-happy people.

The new Dell 325D is a fast, reliable machine with a 32 KB cache, LIM 4.0 hardware support, an

integrated 16-bit VGA controller that supports up to 1024 x 768 resolution, keyboard password protection, a software controlled reset switch, and a PS/2 compatible mouse port as standard equipment. All

TO ORDER, CALL
800-289-1170
IN CANADA, CALL 800-387-5752

FOR NETWORKING/UNIX® INFO
800-678-UNIX

HOURS: 7AM-7PM CT M-F 9AM-4PM CT ON SAT

THE NEW DELL SYSTEM 333D 33 MHz 386 AND THE NEW DELL SYSTEM 325D 25 MHz 386.

STANDARD FEATURES:

- Intel® 80386 microprocessor running at 33 MHz (333D) or 25 MHz (325D).
- Page mode interleaved memory architecture.
- Standard 1 MB of RAM, optional 2 MB or 4 MB of RAM* expandable to 16 MB on system board.
- Integrated VGA controller with 1024 x 768 support.
- 64 KB (333D) or 32 KB (325D) high-speed SRAM.
- Socket for Intel 80387 or WEITEK 3167 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- 6 industry standard expansion slots.

- High-performance IDE (40 MB, 80 MB, 100 MB, 190 MB) and ESDI (330 MB, 650 MB) hard disk drives.
- 1 parallel, 2 serial, PS/2 compatible mouse port, all integrated.
- SmartVu™—advanced systems diagnostic display.
- 12-month On-Site Service Contract provided by Xerox®.

*Xerox Extended Service Plan pricing starts at \$400 (333D) or \$300 (325D).

**Commercial Lease Plan. Lease for as low as \$130/month (333D) or \$112/month (325D).

	333D	325D
40 MB VGA Color Plus System	\$3,599	\$2,999

AD CODE 11D20

All systems are photographed with optional extras. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. *Payment based on 36-month, open-end lease. Leasing arranged by Leasing Group, Inc. In Canada configurations and prices may vary. DELL SYSTEMS is a registered trademark. Dell and SmartVu are trademarks of Dell Computer Corporation. Intel is a registered trademark and 386 is a trademark of Intel Corporation. UNIX is a registered trademark of AT&T in the United States and other countries. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. On-site service may not be available in certain locations. Shipping, handling and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee, limited warranty, and Xerox's Service Contract, please write to Dell Computer Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299. ATTN: Warranty. © 1990 Dell Computer Corporation. All rights reserved.

**UH...
UH...
UH...
GREAT PRICES.**

before we send it out.

Then you get 30 days to use it. If you aren't completely satisfied, send it back. We'll return your money, with no questions asked.



Even if something goes wrong, it won't wreck your day. Both the Dell 325D and 333D come with the built-in SmartVu™ diagnostic display, an ingenious device that identifies problems even if the monitor goes down.

If you need help, the Dell toll-free technical hotline solves 90% of all problems

of which is designed into a compact footprint.

The Dell 333D is as good as a 386 PC can get. Not only is it 33% faster than the Dell 325D, it has a 64 KB RAM cache for an extra kick in performance.

We design every machine to our specs, then build it to yours. When you call us, we take you through all the choices you have in memory sizes, monitors, storage devices, high performance controllers and accessories. We'll help you decide exactly what you need, then custom build your computer and do a fully configured system test

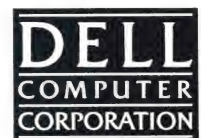
over the phone, often within 4 or 5 minutes.

If we can't solve it over the phone, we'll send Dell trained technicians from Xerox to your desk the next business day with the solution in hand.△

For sale, for lease, for less. Call us. Talk to a computer expert whose only job is to give you exactly what you want in computers, service, software, printers and financing. You'll get solid information that could save you time and money.

Call us now. You'll get a great computer. With no "uhs" about it.

Above and beyond the call.



Can you stomach spending an extra \$10,000 for a PC network or UNIX® workgroup server with dubious service?

We can't. Workgroups are too critical to leave in the hands of amateurs.

So Dell has gone overboard in servicing servers. In fact, we just won the PC Week Poll for Corporate Satisfaction for servers, where our reliability and service were rated far above our competitors.

Which brings us back to our question:

Would you spend an extra \$10,000 for iffy service?

We think it's a no-brainer.

We have two new 486™ EISA servers. Dell

gives you a choice of the 25 MHz Dell™ 425TE and the 33 MHz Dell 433TE.

TO ORDER, CALL
800-289-1170
IN CANADA, CALL 800-387-5752
FOR NETWORKING/UNIX INFO.
800-678-UNIX
HOURS: 7 AM-7 PM CT M-F 9 AM-4 PM CT ON SAT.

The 25 MHz Dell System® 425TE has up to 64 MB of RAM capacity, 11 storage bays, and a whisper-quiet 300 watt power supply. We've also built-in features such as password protection, a software controlled reset switch, and an efficient cooling system to protect component life.

What's more, both the 433TE and the 425TE have the Dell designed SmartVu™ diagnostic display built in. This ingenious innovation helps identify problems even if the monitor goes down.

For even more performance, the 33 MHz Dell System 433TE is everything our 425TE is, with 32% more speed. The Dell exclusive memory design with a 128 KB external cache gives it maximum throughput.

UNBELIEVABLE PRICES.



\$11,799
Dell System 433TE
Lease: \$423/mo.

\$9,599
Dell System 425TE
Lease: \$359/mo.

THE NEW DELL SYSTEM 433TE 33 MHz EISA i486™ AND THE NEW DELL SYSTEM 425TE 25 MHz EISA i486.

- Intel® 80486 microprocessor running at 33 MHz (433TE) or 25 MHz (425TE) with 8 KB internal cache.
 - 128 KB external cache (433TE).
 - Standard 4 MB of RAM,* expandable to 64 MB (eight internal SIMM sockets, each accepting a 1 MB, 2 MB, 4 MB, or 8 MB SIMM, installable in matched pairs).
 - Socket for WEITEK 4167 math coprocessor.
 - 11 internal half-height drive bays.
 - Eight 32-bit EISA expansion slots (six EISA master slots and two EISA slave slots).
 - High-performance IDE (80 MB, 100 MB, 190 MB) and ESDI (330 MB, 650 MB) hard disk drives.
- ΔXerox Extended Service Plan pricing starts at \$1,180 (433TE) or \$960 (425TE).
- *Commercial Lease Plan. Lease for as low as \$423/month (433TE) or \$359/month (425TE).

	433TE	425TE
650 MB VGA Color Plus System 8 MB	\$11,799	\$9,599

AD CODE 11D21



UNBELIEVABLE.



"Server problems? Just ship 'em back, okay?"

"I know those babies like a cat knows her kittens."

"Where's the power switch?"

"My UNIX guy actually talked to the factory once."

"But he's on vacation for two weeks. Sorry."

\$24,698
Compaq SystemPro 486/33

course, they're completely compatible with all major network operating systems, including Novell, 3COM and Banyan.

In a UNIX environment, the 425TE and 433TE are perfect for workgroups supporting either traditional multiuser or

high-speed client/server environments. You can buy Dell servers preloaded with UNIX System V, making them literally plug and play. Even more impressive is the fact that UNIX system administration can be done by Dell, remotely.

Servicing servers is beyond most Compaq dealers. If a server happens to go down, your whole company can go down with it.

Would you trust some unknown technician to bring it back up?

We wouldn't.

That's why we have a special advanced systems hotline for you to call. It's manned by specialists with the UNIX source code licensed from AT&T.

On those rare occasions we can't fix it over the phone, we'll call the Dell trained Xerox technicians. They'll come to your office with the solution or part in hand.[△]

■ **From this foundation, create a powerful PC network or UNIX workgroup.** Dell's new systems have more than enough performance to function as a LAN Server and WAN or internetworking gateway. So they're capable of supporting the most demanding server use—a multi-function network. Of

There's a lot more to know before you buy a server.

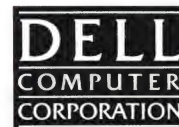
When you call Dell, our experts will give you the help you need to buy a server.

Then we'll send it off with a 30-day no questions asked money back guarantee, and a one year limited warranty.

Call us.

We'd like to make believers out of you.

Above and beyond the call.



The Dell System 433TE and 425TE are Class A devices sold for use in commercial environments only. Performance enhancements: within the first megabyte of memory 384 KB is reserved for use by the system to enhance performance. All systems are photographed with optional extras. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. **Payment based on 36-month, open-end lease. Leasing arranged by Leasing Group, Inc. In Canada, configurations and prices may vary. DELL SYSTEM is a registered trademark. Dell and SmartVu are trademarks of Dell Computer Corporation. Dell UNIX System V 3.2 is based on INTERACTIVE Systems Corporation 386/ix. Intel is a registered trademark and i486 and 486 are trademarks of Intel Corporation. UNIX is a registered trademark of AT&T in the United States and other countries. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. On-site service may not be available in certain locations. Shipping, handling and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee, limited warranty, and Xerox's Service Contract, please write to Dell Computer Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. ©1990 Dell Computer Corporation. All rights reserved.

THE LAP OF LUXURY.

Talk about good things falling into your lap.

Dell's first laptop—the 16 MHz 386™ SX—was *PC Magazine's* Editor's Choice, and won *PC Week's* Corporate Satisfaction Poll for 386SX laptop computers.

Now we've made a faster 20 MHz model, with a new higher contrast display.

And it's only \$3,899.

Which is a hefty \$2,900 less than

Compaq's SLT
386s/20.†

In fact, it even

costs less than most slower 16 MHz laptops.

How those other guys can charge so much is insane.

(Here's another good one: We're also cutting the price of our original 16 MHz laptop to \$2,999. That should drive our competitors up the padded wall.)

It's a desktop PC trapped in the body of a laptop.

This lightweight laptop acts suspiciously like a desktop system.

With the Intel® 20 MHz 386SX microprocessor, it's as powerful as most desktops.

It's nearly as expandable, too. You get up to 8 MB



The new Dell System 320LT
20 MHz 386SX

THE NEW DELL SYSTEM® 320LT 20 MHz 386SX AND THE DELL SYSTEM 316LT 16 MHz 386SX

- Intel 80386SX microprocessor running at 20 MHz (320LT) or 16 MHz (316LT).
- Standard 1 MB of RAM.* optional 2 MB of RAM expandable to 8 MB (on the system board using 1 MB SIMMS).
- LIM 4.0 support for memory over 1 MB.
- 640 x 480 VGA Liquid Crystal Display.
- One industry standard half-size 8-bit expansion slot.
- Dedicated Data/Fax modem slot.
- Socket for Intel 80387SX math coprocessor.
- 3.5" 1.44 MB diskette drive.
- 83-keyboard with embedded numeric keypad
- 1 parallel, 1 serial, and external VGA monitor port.
- Connector for 101-key keyboard or numeric keypad.
- Connector for external 5.25" 1.2 MB diskette drive.
- Two removable and rechargeable NiCad battery packs utilizing Dell's "Continuous Power Battery System" (patent pending).
- Xerox Extended Service Plan pricing starts at \$390 (320LT) or \$300 (316LT).

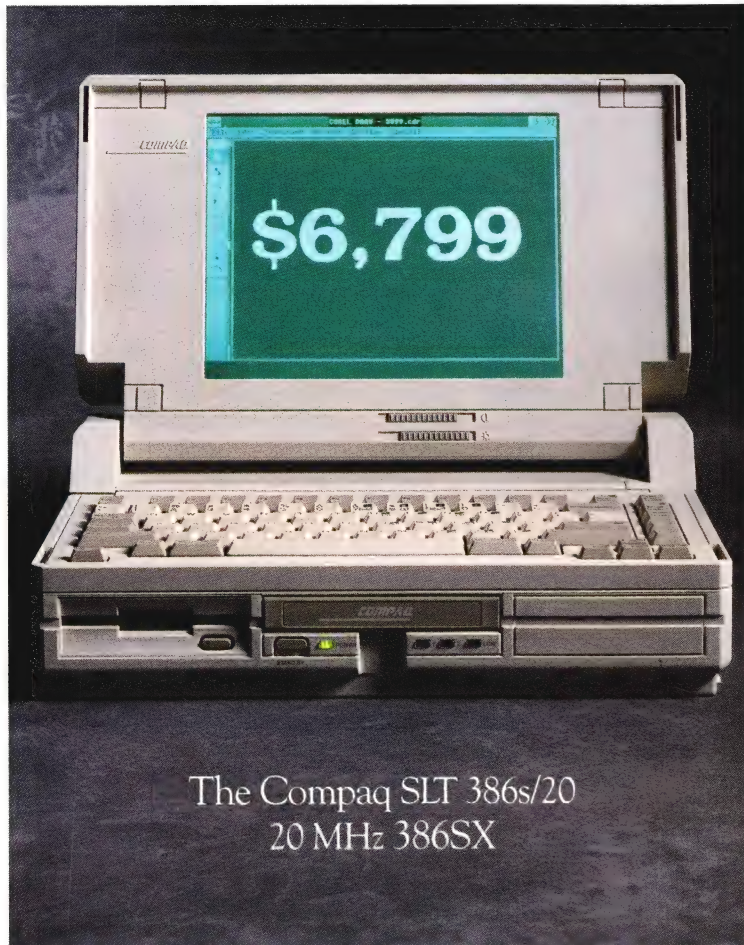
**Commercial Lease Plan. Lease for as low as \$141/month (320LT) or \$112/month (316LT).

316LT: 20 MB, 1 MB RAM \$2,999
320LT: 40 MB, 2 MB RAM \$3,899

AD CODE 11D23

*Performance Enhancements: Within the first megabyte of memory, 128KB is reserved for use by the system to enhance performance. DELL SYSTEM is a registered trademark and Dell is a trademark of Dell Computer Corporation. Intel is a registered trademark and 386 is a trademark of Intel Corporation. †Source: Dataquest Inc. (SpecCheck Spring 1990). **Payment based on 36-month, open-end lease. ‡Leasing arranged by Leasing Group, Inc. In Canada, configurations and price may vary. Dell cannot be responsible for errors in typography or photography. Shipping, handling and applicable sales tax are not included. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. †On-site service may not be available in certain locations. ©1990 Dell Computer Corporation. All rights reserved. For information on and a copy of Dell's 30-Day Total Satisfaction Guarantee, limited warranty and Xerox's Service Contract, please write to Dell Computer Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty.

THE LAP OF LUNACY.



The Compaq SLT 386s/20
20 MHz 386SX

of RAM, a 3.5" 1.44 MB diskette drive and a 20 or 40 MB hard drive. It also has a dedicated slot for a Dell™ Data/Fax modem, and a separate slot for a standard half-length expansion card. (On a Compaq, that expansion slot would cost you an extra \$1,000).

When it's time to stay put, you can connect our laptop to an external VGA monitor and keyboard, a 5.25" external floppy disk drive, and even to your network or mainframe.

If you can work 24 hours a day, our laptop can work 24 hours a day. Dell's special Continuous Power Battery System lets you change batteries without losing your data, or your train of thought. The system includes two lightweight rechargeable battery packs.

Our service goes where you go. If you have a question, our toll-free technical hotline solves 90% of all problems over the phone. If we can't solve it over the phone, we'll send a Dell trained technician from Xerox to your lapside the next business day—nearly anywhere in the contiguous U.S.△

For sale, for lease, for less. When you call us, you talk with a computer expert whose sole mission is to give you exactly what you

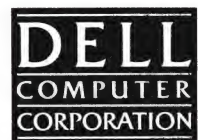
want. At a great price. We'll custom configure your laptop, give you a 30-day no questions asked money back guarantee, and a choice of leasing plans.◇

Then we'll do a configured system test, and ship it wherever you want.

Call now for either our 16 MHz or new 20 MHz 386SX laptops.

It'd be lunacy not to.

Above and beyond the call.



"Overkill."

That's the kind word *PC Week* used to describe our service.

It came up when Dell™ computers won their first

PC Week Corporate Satisfaction Poll for PCs, and our service beat the daylight out of everybody else's.

Now that we've won eight out of eight *PC Week* polls, it's even more appropriate. Because each time,

our service is called vastly superior.

While the service provided by

WHAT SERVICE!

most of our competition is often called "non-existent."

Actually, one of the nice things about our service is that you'll rarely need it.

Another poll category we dominate is the one called "reliability"—due

in no small measure to our testing on

each machine as it goes out the door.

You shouldn't have to go through some Compaq

dealer. It's better for you to talk directly to the manufacturer. So we've made it easy to call us direct. We have a staff of technical people trained at Dell who solve over 90% of the problems over the phone, generally in under 5 minutes.

And we're open when you're open. Our normal hotline hours are from 7am to 7pm Central Time, Monday through Friday. On Saturdays, from 9am to 4pm Central Time.

Here's Why Our Service Is Rated The Best In The Industry

All service is included in the price of the computer.

Self-diagnostic software.

Toll-free technical support hotline.

Next business day deskside service.

Here's How We Made It Even Better:

New Hours:

7am to 7pm Central Time, Monday-Friday

9am to 4pm Central Time, Saturdays.

24-hour toll-free TechFax line.

Dell Bulletin Board (512) 338-8528.

AD CODE 11D25

Dell cannot be responsible for errors in typography or photography. Dell is a trademark of Dell Computer Corporation. UNIX is a registered trademark of AT&T in the United States and other countries. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. [^]On-site service may not be available in certain locations. ©1990 Dell Computer Corporation. All rights reserved.

But let's say your normal hours are ridiculously abnormal.

Even if you're pulling an all-nighter, you can still call the Dell technical library on our new twenty-four hour automated TechFax line. Detailed information will be faxed

WHAT SERVICE?

back to you automatically.

But our help doesn't end there.

We've introduced a Dell Bulletin Board. When you tap into it with a modem, you'll see other questions about Dell computers. Better yet, you'll see Dell's answers, which could help you learn more about your own Dell system.

One more word about your calls:

We log every call you make to us into a database.

Over the course of years, we end up knowing your computer better than you do. This familiarity with

your computer means better help quicker.

We're actually there when you need us the most.

It doesn't happen often, but sometimes even our experts can't solve your problem over the phone. Then we call Dell trained technicians at Xerox and tell them what's

going on with your system. They'll come to your desk the next business day, with the solution or part in hand.

You can test our service right now. We figure the best way to sell you on our service is to show it in

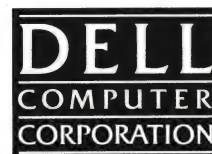


action. Call and talk to our technicians. If you don't have a problem, make one up. Or just chat. Get a feel about what we know, and how we handle questions, and what we can do for you.

Okay, we're going to repeat this one more time:

For PC service that's been voted the best in the business eight times, call 800-624-9896.

It'll give you a taste of what you've been missing.



Above and beyond the call.

TO ORDER, CALL
800-289-1170

IN CANADA, CALL 800-387-5752

FOR NETWORKING/UNIX® INFO
800-678-UNIX

HOURS: 7 AM-7 PM CT M-F 9 AM-4 PM CT ON SAT

HERE'S OUR NEW STORE, SO YOU'LL NEVER HAVE TO GO TO THEIR STORE AGAIN.

When you go out to buy computers,
here's what you usually get:

A beefy mark-up.

Pressure to buy something you don't want.

That crummy feeling of not knowing
what you're getting, because the salesman
isn't sure what he's selling.

And, when there are problems, some
stranger with a screwdriver taking your
computer apart.

When you call Dell, on the other hand,
here's what you get:

A frank talk with computer experts about
what you need, and a recommendation
about the best overall package for you.



THE DELL SYSTEM 316SX 16 MHz 386™ SX.
The perfect low profile mainstream computer.

• Intel 80386SX microprocessor running at 16 MHz. • Standard 1 MB of RAM, optional 512 KB, 640 KB or 2 MB of RAM* expandable to 16 MB (8 MB on system board). • Page mode interleaved memory architecture. • LIM 4.0 support for memory over 640 KB. • Socket for Intel 80387™ SX math coprocessor. • 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive. • Enhanced 101-key keyboard. • 1 parallel and 2 serial ports. • 3 full-sized 16-bit slots. • 12-month On-Site Service Contract provided by Xerox. • **Commercial Lease Plan. Lease for as low as \$82/month. • Xerox Extended Service Plan pricing starts at \$220. 40MB VGA Color Plus System - \$2,199
Price listed includes 1 MB of RAM. 20, 40, 80, 100 and 190 MB hard drive configurations available.

AD CODE 11D24

Customer
configuration,
with a long list
of options including
monitors, memory sizes,

software, accessories and peripherals.

Service—often voted the best in the industry—by
computer experts who know our computers inside and out.

A variety of financing and leasing[◇] options.

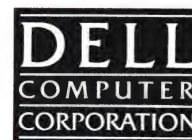
A firm promise to build your computers, a configured
systems test, and shipment by two-day air standard.

A 30-day, no questions asked, money back guarantee.

A one-year limited warranty.

And a great price, with no mark-up.

Call us now. Why waste a trip when everything
you need is right in front of you?



Above and beyond the call.

TO ORDER, CALL
800-289-1170
IN CANADA, CALL 800-387-5752

FOR NETWORK/UNIX*INFO
800-678-UNIX
HOURS: 7 AM-7 PM CT M-F 9 AM-4 PM CT SAT

Seal or tape all edges for mailing—do not use staples.

FOLD HERE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 69 SALEM, NH

POSTAGE WILL BE PAID BY ADDRESSEE

DELL DIRECT ADVANTAGE
CREDIT CARD DEPARTMENT
54 STILES RD
SALEM NH 03079-9903



GIVE ME SOME CREDIT.

Fill out the application for the Dell Direct Advantage MasterCard and return this postage-free card. As soon as you qualify you will receive your card, so you can start earning credits towards new Dell computers.

YES! I WOULD LIKE TO APPLY FOR A GOLD MASTERCARD® ☐ OR A SILVER MASTERCARD® ☐

BTZF 15-027
38-028

Should my application for a Gold MasterCard® not be approved, this request constitutes my application for a Silver MasterCard® and I accept that on a periodic basis I may be considered for an automatic upgrade to the Gold MasterCard® at MBNA America's discretion. The information I provide will also be used to set up my Direct Advantage buyer account.

APPLICATION INFORMATION (Please print clearly)

NAME (first, middle, last)		DATE OF BIRTH		SOCIAL SECURITY NUMBER	
ADDRESS (No P.O. Boxes Please)		CITY & STATE		ZIP CODE	YEARS THERE
☐ RENTING ☐ OWN ☐ BUYING	MONTHLY PAYMENT \$	HOME PHONE ()	MOTHER'S MAIDEN NAME (For use when you request special action taken on your account)		
PREVIOUS ADDRESS (If less than 3 years at current address)		CITY & STATE		ZIP CODE	YEARS THERE
NATURE OF BUSINESS		BUSINESS PHONE ()	ANNUAL INCOME \$	OTHER INCOME Which you rely on as basis of repayment \$	
EMPLOYER	POSITION	YEARS THERE	SOURCE OF OTHER INCOME (Alimony, child support, spousal income, or separate maintenance income need not be revealed if you do not wish it considered as a basis of repayment.)		

CO-APPLICANT INFORMATION (If you wish an additional card issued to a co-applicant over 18 years of age complete the information below.)

NAME (first, middle, last)		RELATIONSHIP		SOCIAL SECURITY NUMBER	
EMPLOYER	POSITION	YEARS THERE	BUSINESS PHONE ()	ANNUAL SALARY \$	

CURRENT CREDIT CARD ACCOUNTS

MY MASTERCARD®/VISA® ACCOUNT # IS:	MY AMERICAN EXPRESS® ACCOUNT # IS:
------------------------------------	------------------------------------

PLEASE SIGN AUTHORIZATION

I (we) authorize MBNA America™ to investigate any facts, and obtain any reports regarding this application and/or resulting account with credit reporting agencies and others. Upon request, I (we) will be informed of each agency's name and address.

I have read this entire application, agree to its terms, and certify that the information is correct.

I have read this entire application, agree to its terms, and understand that I will be jointly and severally liable for all charges on the account.

X _____ (Seal)
APPLICANT SIGNATURE DATE

X _____ (Seal)
CO-APPLICANT SIGNATURE DATE

Annual Fee	\$40 Gold MasterCard®	\$25 Silver MasterCard® (fee for all cards waived first year)
Annual Percentage Rate	19.8%	
Grace Period for Repayment of Balances for Purchases	At least 25 days from statement closing date	
Method of Computing the Balance for Purchases	Average Daily Balance (including new purchases)	
Transaction Fee for Cash Advances and Fee for Paying Late or Exceeding the Credit Limit	Transaction fee for bank and ATM cash advances: 2% of each cash advance, \$2 minimum, \$25 maximum Transaction fee for Access Check cash advances: 1% of each cash advance, \$2 minimum, \$10 maximum Late Payment Fee: \$15 Over the Credit Limit Fee: \$15	
The information about the cost of the card(s) described in this application is accurate as of 8/90. This information may have changed after that date. To find out what may have changed, call us at 1-800-847-7378. MBNA America™ is an MNC Financial Company. MasterCard® is a federally registered service mark of MasterCard International, Inc. used pursuant to license. This offer not available in Delaware.		

Here's why it's worth adding another credit card to your wallet:

The Dell Direct Advantage MasterCard is just like other premium cards, and can be used at eight

of financing and leasing[◇] plans custom made for all sizes and sorts of businesses.**

For instance, you can lease Dell computers for as little as \$59 a month, and reap all the benefits

WE MAY NOT GIVE OUR COMPETITORS MUCH CREDIT, BUT WE THINK YOU DESERVE SOME.



leasing affords.

Or you can take advantage of the Power Payment Plan.[™] On

this plan, you can lease your Dell computers, and at the end of the term, buy them outright for one dollar.

There are numerous financing plans, and we'll work with you on a plan that's in your best interest.

Get the credit you deserve.

million locations worldwide.

But, unlike other credit cards, everytime you use it you earn points toward Dell[™] products.

Plus, upon approval, you can get up to \$15,000 credit. Which is a lot more than most credit cards.

And there's no annual fee the first year. Which is a lot less than most credit cards.

You can get more credit than you think. Not all credit on Dell products is plastic. There are a variety

These are the most comprehensive credit

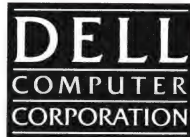
and leasing plans in the industry. For information, call 800-688-3355.

For the Dell Direct Advantage MasterCard, fill out the application and drop it in the mail.

And if there's any other way we can help out, let us know. We'll do anything to make buying a

Dell computer easier.

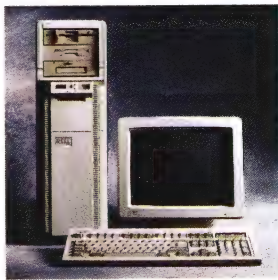
Above and beyond the call.



AD CODE 11D26

Dell cannot be responsible for errors in typography or photography. In Canada, configurations and prices may vary. Dell is a trademark of Dell Computer Corporation. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. **Payment based on 36-month open-end lease. †Leasing arranged by Leasing Group Inc. Power Payment Plan is a trademark of Leasing Group Inc. © 1990 Dell Computer Corporation. All rights reserved.

Circle 318 on reader service card



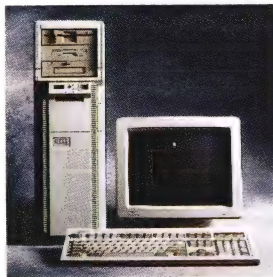
THE NEW DELL SYSTEM*433TE
33 MHz EISA i486.**

- Intel® 80486 microprocessor running at 33MHz.

****Commercial Lease Plan. Lease for as low as \$377/month.**
Xerox Extended Service Plan pricing starts at \$1,040.

330 MB Super VGA Color System
(800 x 600) \$10,499

Price listed includes 4 MB of RAM.
80, 100, 190, 330 and 650 MB hard drive configurations available.



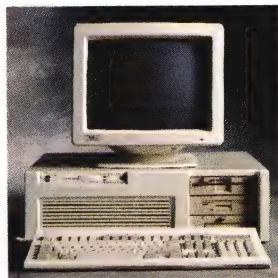
THE NEW DELL SYSTEM 425TE
25 MHz EISA i486.

- Intel 80486 microprocessor running at 25 MHz.

Commercial Lease Plan. Lease for as low as \$278/month.
Xerox Extended Service Plan pricing starts at \$770.

190 MB Super VGA Color System
(800 x 600) \$7,699

Price listed includes 4 MB of RAM.
80, 100, 190, 330 and 650 MB hard drive configurations available.



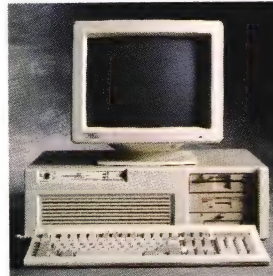
THE DELL SYSTEM 433E
33 MHz EISA i486.

- i486 microprocessor running at 33 MHz.

Commercial Lease Plan. Lease for as low as \$307/month.
Xerox Extended Service Plan pricing starts at \$850.

100 MB Super VGA Color System
(800 x 600) \$8,499

Price listed includes 4 MB of RAM.
80, 100, 190, 330 and 650 MB hard drive configurations available.



THE DELL SYSTEM 425E
25 MHz EISA i486.

- i486 microprocessor running at 25 MHz.

Commercial Lease Plan. Lease for as low as \$235/month.
Xerox Extended Service Plan pricing starts at \$650.

100 MB Super VGA Color System
(800 x 600) \$6,499

Price listed includes 4 MB of RAM.
80, 100, 190, 330 and 650 MB hard drive configurations available.



THE NEW DELL SYSTEM 333D
33 MHz 386.

- Intel 80386 microprocessor running at 33 MHz.

Commercial Lease Plan. Lease for as low as \$145/month.
Xerox Extended Service Plan pricing starts at \$400.

80 MB Super VGA Color System
(800 x 600) \$3,999

Price listed includes 1 MB of RAM.
40, 80, 100, 190, 330 and 650 MB hard drive configurations available.



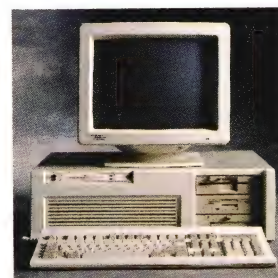
THE NEW DELL SYSTEM 325D
25 MHz 386.

- Intel 80386 microprocessor running at 25 MHz.

Commercial Lease Plan. Lease for as low as \$112/month.
Xerox Extended Service Plan pricing starts at \$300.

40 MB VGA Color Plus System
\$2,999

Price listed includes 1 MB of RAM.
40, 80, 100, 190, 330 and 650 MB hard drive configurations available.



THE DELL SYSTEM 320LX
20 MHz 386SX.

- Intel 80386SX microprocessor running at 20 MHz.

Commercial Lease Plan. Lease for as low as \$104/month.
Xerox Extended Service Plan pricing starts at \$280.

40 MB VGA Color Plus System
\$2,799

Price listed includes 1 MB of RAM.
40, 80, 100, 190, 330 and 650 MB hard drive configurations available.



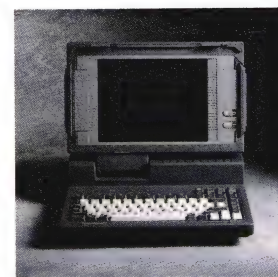
THE DELL SYSTEM 210
12.5 MHz 286.

- 80286 microprocessor running at 12.5 MHz.

Commercial Lease Plan. Lease for as low as \$59/month.
Xerox Extended Service Plan pricing starts at \$155.

20 MB VGA Monochrome System
\$1,549

Price listed includes 1 MB of RAM.
20, 40, 80 and 100 MB hard drive configurations available.



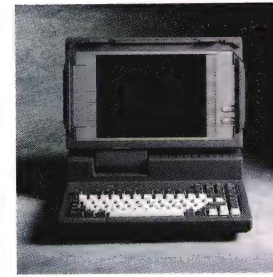
THE NEW DELL SYSTEM 320LT
20 MHz 386SX.

- Intel 80386SX microprocessor running at 20 MHz.

Commercial Lease Plan. Lease for as low as \$141/month.
Xerox Extended Service Plan pricing starts at \$390.

40 MB, 2 MB RAM \$3,899

Price listed includes 2 MB of RAM.
20 and 40 MB hard drive configurations available.



THE DELL SYSTEM 316LT
16 MHz 386SX.

- Intel 80386SX microprocessor running at 16 MHz.

Commercial Lease Plan. Lease for as low as \$112/month.
Xerox Extended Service Plan pricing starts at \$300.

20 MB, 1 MB RAM \$2,999

Price listed includes 1 MB of RAM.
20 and 40 MB hard drive configurations available.

The Dell System 433TE and 425TE are Class A devices sold for use in commercial environments only. *Performance Enhancements: Within the first megabyte of memory, 128 KB (316SX, 316LT and 210), 96 KB (333D and 325D) or 384 KB (320LX, 310, 425E and 433E) of memory is reserved for use by the system to enhance performance. Can be optionally disabled on 333D, 325D, 316SX and 210. All systems are photographed with optional extras. Dell cannot be responsible for errors in typography or photography. **Payment based on 36-month, open-and-lease. Leasing arranged by Leasing Group, Inc. In Canada, configurations and prices may vary. DELL SYSTEM is a registered trademark. Dell, 425E and SmartVu are trademarks of Dell Computer Corporation. Intel is a registered trademark and 386, 486 and i486 are trademarks of Intel Corporation. UNIX is a registered trademark of AT&T in the United States and other countries. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. *On-site service may not be available in certain locations. Shipping, handling and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee, limited warranty, and Xerox's Service Contract, please write to Dell Computer Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. © 1990 Dell Computer Corporation. All rights reserved.



CONSUMER WATCH

Advice and information for the computer consumer

Got a technical question that needs answering in a hurry? Vendor phone lines aren't your only source of information.

Roberta Furger

Where Can You Turn When Tech Support Fails?

Let's face it. Vendor phone support doesn't always do the job. Busy signals, long periods on hold, and incomplete or incorrect answers can all prevent a quick resolution of your problem.

But striking out with traditional technical support doesn't have to mean hours or days wasted as you desperately try to find someone who can answer your questions. Third-party help is close at hand.

Dial-Up Service

If you're like many PC users, your first inclination when confronted with a technical problem is to pick up the phone and dial the vendor's tech support line. But this time-honored method may not be the best way—or the most efficient—to

get your questions answered.

As discussed in this month's feature "Who Pays for Tech Support?," on-line services are being touted by users and vendors alike as a cheaper, more versatile alternative to telephone support. Most major hardware and software companies offer some type of bulletin board service (BBS) where users can post questions, get the latest product news, and download drivers and fixes. All you need is a modem and communications software, and technical assistance is yours 24 hours a day, seven days a week. You aren't limited to the on-line services supported and maintained by vendors, however. CompuServe offers more than 100 forums for PC hardware and software products, many of which were started and continue to be supported by enthusiastic users rather than the product manufacturer.

Both independent and vendor-sponsored forums include three basic components: message services; library areas for downloading bug fixes, updates, and drivers; and live conference areas. Most forums are free to CompuServe subscribers (the annual fee is \$39.95), but you may find that some vendor-sponsored forums are available only to registered users of a product.

Vendor-sponsored forums are monitored by a company representative, and a response is usually guaranteed within 24 hours. But independent forums are often just as helpful and as quick to respond, since fellow users don't hesitate to jump in with their own tried-and-true remedies to problems posted on the BBS.

Although the process of posting a message is relatively straightforward, many PC novices may be leery of going this route; there's something comfort-

ing about being able to talk to another human being, particularly if you're not on solid technical ground to start with. But when you're feeling adventurous and aren't in an emergency situation, dial up one of the services. You may be surprised at the results.

Users Helping Users

What makes on-line services worthwhile is the broad spectrum of users who are willing to share their experiences. The same dynamic makes user

On-line services represent a cheap, versatile support alternative.

groups an ideal source of technical assistance.

Virtually every user group includes a question-and-answer session during its monthly meetings so users can get advice and information from fellow members. Most user group newsletters also feature a Q. and A. section where knowledgeable members will answer questions on a variety of topics.

But what if you can't wait until the next meeting or the next newsletter to get your problem resolved? That's where two other services—user group-sponsored bulletin boards and help lines—play a key role.

"Virtually every user group out there with 100 or more members has a BBS," says Jerry Schneider, a member of the Capital PC User Group and founder of the Association of PC User Groups. "By its very nature a BBS means an ex-
(continues)

change of information on products and services. It's very common for a user to describe a problem and have several members answer."

Although their user base isn't as large or as targeted as a CompuServe forum, user group bulletin boards can be invaluable when it comes to getting problems solved—especially if you're

using an obscure product that isn't supported elsewhere.

"Members are never at a loss for words," says Carol Diamond, staff administrator for the Chicago Computer Society, which runs a BBS for its members. "You always get an answer—and more."

Moreover, many user groups don't

stop with on-line support. Several of the larger groups—from the Sacramento IBM PC Users Group to the Boston Computer Society—organize telephone support, where members knowledgeable about particular products share (continues)

Turn Your Computer into the World's Fastest Billing Clerk For Only \$149. (And it never calls in sick!)

The "Invoicer with Accounts Receivable" software package is a fast and easy way to automate the tedious process of invoicing. Within minutes of set-up, statements and invoices are flying out (as high as 150 per hour!) Printed on your letterhead or on preprinted forms, your new bills are neat and accurate. Your firm's image is quickly enhanced.

Check the price

"The Invoicer with Accounts Receivable" sells for \$149 (most others cost \$500 or more). Complete with disk and tutorial, this package is a quick to learn, complete program for all your needs in billing and accounts receivable. Other inexpensive packages include Accounts Payable, Inventory & Sales Tracking and others. Inquire about quantity discounts.

Customer Service

With your software package you also receive free telephone support and consultation from the same people who wrote the program. You may not need the support, but it is there just in case. At your request, we will custom modify the

(go to top of next column)

package to precisely fit your particular needs. Rates are low and response is fast—15 days sometimes.

Every buyer of our software has a 30 day money-back guarantee.* If you are not pleased with the program, for any reason, you may return for a refund.* "The Invoicer" has thousands of satisfied users all over the country.

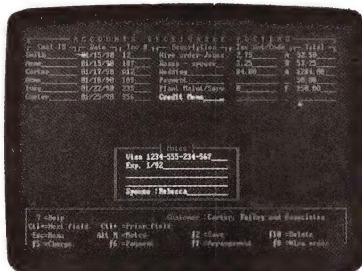
Advanced Features

"The Invoicer" does products and/or services billing. Your statements will look accurate and legible.

You can easily correct transactions without re-entering them. There are plenty of "help" windows to use in case you need a quick look-up.

To find out if "The Invoicer" is right for your business, just call 1-800-950-7943. We can't list the dozens of important functions and features here, but over the phone we will tell you exactly how "The Invoicer" can

boost your company's cash flow and image. Turn your computer into the world's fastest billing clerk today by calling our toll free 800 number. "The Invoicer" works on most personal computers. Just inquire.



"Easy-to-use... a snap"
B. Blier - Boston, Mass.

"A nice touch... Very comfortable..."
PCM Magazine - October '89

"A great invoicing package"
T. Dillard - Harvard, Mass.

"Invoicer is a great value"
PC Club - Toronto.

"Rated 8 out of 10..."
"All the basics..."
"A new touch..."
Inquirer/A+ - May '90

Call
1-800-950-7943

MiccaSoft, Inc.

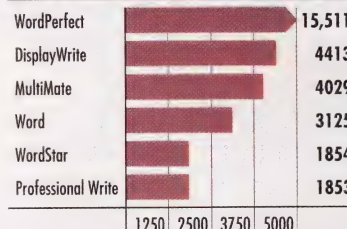
406 Windsor Lane • New Braunfels, Texas 78132 • (512) 629-4341

*all guarantees and warranties subject to written restrictions • \$20.00 restocking fee • 60 days free telephone support

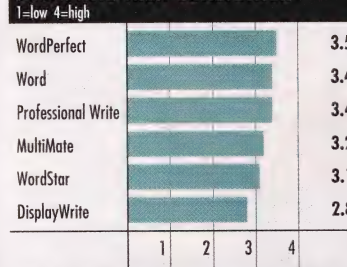
RATE YOUR SATISFACTION: MS-DOS Word Processing Software

WordPerfect continues to hold the number one spot in the word processing category, boasting more than 3½ times the installed base of any of its competitors. Unlike many market leaders, it also gets the highest satisfaction rating among users, and ranks at the top of the plan-to-buy statistics. Microsoft Word and Professional Write score high marks for user satisfaction, coming in just behind WordPerfect in this category.

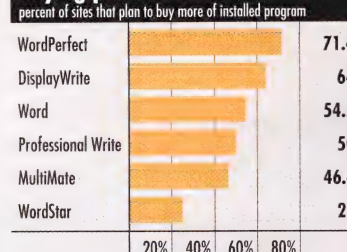
Installed base at survey sites



Users rate their satisfaction



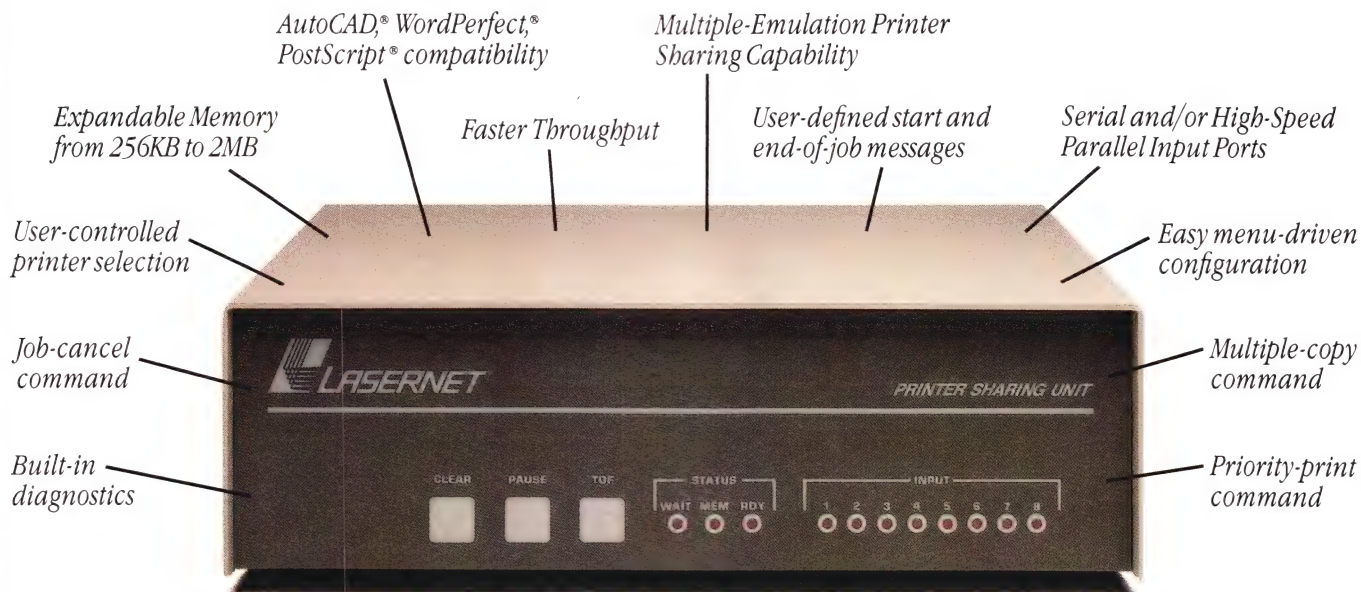
Buying plans



Source: International Data Corporation. From a survey of 200 organizations, each with at least 50 PCs.

Circle 166 on reader service card

Can printer sharing get any better than this?



Yes. We've lowered the price.

The LASERNET® "C" Series Printer & Plotter Sharing Units

Increased performance and a lower price. With all the printer sharing devices on the market to choose from, none give you better price/performance than LASERNET from Western Telematic.

Performance like the only PSU that can **share a multiple-emulation printer**, and **faster throughput** for large graphics and printing jobs. Compatibility with all types of printers and plotters, and over 25

high-level graphics, desk-top publishing, spreadsheet and word processing packages.



The PSU-82C/SP has parallel and serial inputs and outputs for both high-speed throughput and long-distance sharing.

Bundle all these features with a three-year warranty and direct factory assistance, and you've got value that can't be beat. But the proof is in the comparing.



Network up to eight PCs with any two printers or plotters with LASERNET.

When shopping for a high-performance printer/plotter sharing unit, take a look at the LASERNET "C" series. See if you agree there's no better performing PSU for the money.

For more information on the "C" Series or other members of the LASERNET family, call us toll free at **1-800-854-7226**, (in California call 1-714-586-9950) FAX 1-714-583-9514, or write Western Telematic Inc., 5 Sterling, Irvine, CA 92718.

Visit Us at Comdex
Booth No. 897-898

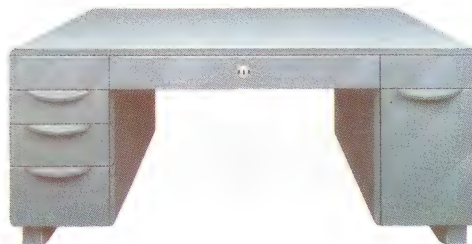
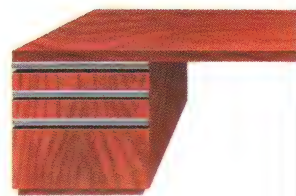
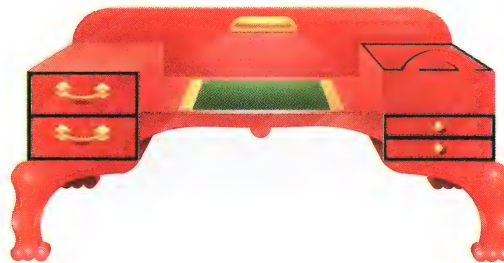
**western™
telematic inc.**

Making good connections.™

©Copyright—1990 Western Telematic Inc. All rights reserved. LASERNET is a registered trademark, and Western Telematic and WTI Logo are trademarks of Western Telematic Inc. AutoCAD, PostScript and WordPerfect are registered trademarks of their respective companies.

Circle 325 on reader service card

The affordable HP Laser



Put an HP LaserJet printer on everyone's desk.

With a list price of \$1,495,* we're now delivering the legendary Hewlett-Packard LaserJet IIP printer at a very personal size and price. Without sacrificing any of the qualities people love in a LaserJet.

You get crisp 300 dpi text and

graphics. Software and hardware compatibility. And a wide selection of HP typefaces and accessory products.



Jet IIP can top anyone's hardware.



Plus, there's room to grow, without taking up any more desk space. From our "Great Start Font Cartridge" up through scalable type, you can dramatically expand the way people express themselves. You can even add an optional 250-page paper cassette for people who have a lot to say. Or need the flexibility of two paper trays.

What's more, with HP quality built into every printer, you can look forward to smooth operation.

It's no wonder *PC Magazine* gave the HP LaserJet IIP its coveted 1989 and 1990 Editors' Choice awards. Or that *InfoWorld* selected the LaserJet IIP as the 1989 Hardware Product of The Year.

Call **1-800-752-0900, Ext. 1587** for the name of your nearest authorized HP dealer.

You'll find that when it comes to affordable laser printers, nobody can top HP.



their expertise. Listings typically are published in the monthly newsletter and include information on the products volunteers are familiar with as well as the days and times they can be reached. The Chicago Computer Society's newsletter, for example, features four pages of names and phone numbers of members who have volunteered to answer ques-

tions on everything from obscure shareware products to Lotus's 1-2-3. And in Houston, 500 members of the HAL PC user group have volunteered their time to answer technical questions.

There's more to user groups, however, than the formal programs they sponsor. Members often go out of their way to assist other users. "When was

the last time your dealer made a house call to solve a problem?" asks Schneider. "User group members do that every day."

Formal Alternatives

If you need a more structured way of getting answers to technical questions and vendor-provided support isn't doing the trick, one option is to hire a PC consultant. Organizations are springing up throughout the country that offer fee-based support on a variety of hardware and software products as well as assistance in tying together all the pieces.

One company, Computer Hand Holding of San Francisco, has been in the business of providing third-party technical support since 1983. Although not every company needs a consultant, this option is ideal for firms whose employ-

Users can pay per call or contract for service.

ees aren't sophisticated technically, especially if you "don't want them wasting a lot of time dealing with a vendor's technical support staff," says company founder and president Emil Flock.

Even the larger companies that have traditionally offered on-staff help desks are choosing this route as a cost-efficient way of answering technical questions quickly and accurately.

One new firm, the PC Help Line in Marietta, Georgia, offers two types of service. Users can pay on a per-call basis (at \$2 per minute), or they can contract for the service based on the number of users supported. The Help Line is open from 9 a.m. to 5 p.m. EST and offers a toll-free number for out-of-state customers.

"We're another alternative when you're in a hurry, the software company's line is busy, and you can't get through to your brother," says Mark (continues)

Simply Your Best Buy Company...



Don't settle for less than you need. Get the most system for your money!

BLK 486 25 MHz

- 80486-25 MHz CPU
- 64K Cache
- 4 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 150 MB, 14 ms ESDI Hard Drive
- ESDI Controller with 32K Cache
- VGA Card 16-Bit with 512K RAM
- 1024x768 Multisync Monitor
- 101 Keyboard
- 220W Power Supply

\$5,095.00

BLK 386SX 16 MHz

- 80386SX-16 MHz CPU
- 2 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 40 MB, 28 ms Hard Drive
- Dual HD/FD 1:1 Controller
- VGA Card 8-Bit
- 14" VGA Monitor
- 101 Keyboard
- 220W Power Supply

\$1,795.00

BLK 386 33 MHz

- 80386-33 MHz CPU
- 4 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 150 MB, 14 ms ESDI Hard Drive
- ESDI Controller with 32K Cache
- VGA Card 16-Bit with 512K RAM
- 1024x768 Multisync Monitor
- 101 Keyboard
- 220W Power Supply
- With 64K Cache \$3,695.00

\$3,595.00

BLK 386 25 MHz

- 80386-25 MHz CPU
- 4 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 80 MB, 28 ms Hard Drive
- Dual HD/FD 1:1 Controller
- VGA Card 16-Bit with 512K RAM
- 1024x768 Multisync Monitor
- 101 Keyboard
- 220W Power Supply
- With 64K Cache \$2,895.00

\$2,695.00

BLK 386 20 MHz

- 80386-20 MHz CPU
- 2 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 65 MB, 28 ms RLL Hard Drive
- Dual HD/FD 1:1 RLL Controller
- VGA Card 16-Bit
- 14" VGA Monitor
- 101 Keyboard
- 220W Power Supply

\$2,095.00

BLK 286 12 MHz

- 80286-12 MHz CPU
- 1 MB of RAM
- 2 Serial, 1 Parallel, and 1 Game Port
- 5.25" 1.2 MB Floppy Drive
- 40 MB, 28 ms Hard Drive
- Dual HD/FD 1:1 Controller
- Monographics Card
- 14" Monochrome Monitor
- 101 Keyboard
- 220W Power Supply
- VGA Option \$1,545.00

\$1,145.00

For All Your Other System Needs Call Blackship.



"Of our seven contenders, the Blackship 486-25 earned the top value."
— InfoWorld, March 12, 1990



"With its winning combination of quality off-the-shelf parts, the Blackship 386-33 offers solid performance at an affordable price."
— PC Magazine, February 13, 1990

"... its price/performance ratio easily justifies PC World's Best Buy recommendation."
— PC World, August 1988

CALL TOLL-FREE
1-800-877-6249



BLACKSHIP
COMPUTER SYSTEMS, INC.
4031 Clipper Court • Fremont, CA 94538
Tel: 415-770-9300 • Fax: 415-770-8674

Circle 1 on reader service card

74 PC WORLD OCTOBER 1990

Rob Peter to Pay Paul



March 27, 1990
The Mace Utilities, Version 1990

NORTON USERS: Upgrade to
MACE UTILITIES Version 1990
for just \$50!

"Mace Utilities, Version 1990: Emergency Room Pushes Aside Norton's Disk Doctor"

"...it can get you out of hot water while other programs are vainly attempting to save the day"

- Edward Mendelsohn,
PC MAGAZINE Associate Editor

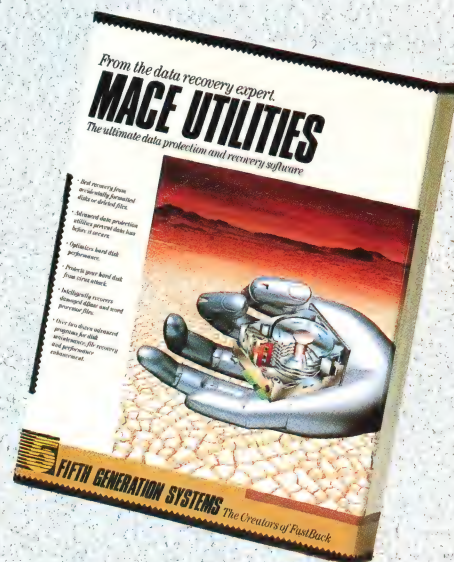
Now that the jury is in, a lot of people who bought Peter Norton's **Norton Utilities Advanced Edition** wish they had bought Paul Mace's **Mace Utilities Version 1990** instead.

It's easy to understand. In announcing its prestigious Editor's Choice Award, **PC Magazine** noted that **The Mace Utilities Version 1990** "repairs damage that nothing else has the nerve to even look at."

Well, here's good news. If you bought Norton Utilities, just "rob" the title page from the User Manual, and we'll upgrade you to **Mace Utilities Version 1990** for just \$50. That's \$100 off the retail price, right now!

Not only is **The Mace Utilities Version 1990** the acknowledged leader in recovering lost or damaged hard disk data, it also includes many extra features like virus protection and "smart" recovery of dBase and word processor files - performing fully automatic (and *reversible*) diagnosis and repair with no user assistance.

Why go without the *ultimate* hard disk utilities any longer? Just send us the title page from your Norton Utilities manual (any version) and your check for \$50. We'll rush your copy of **Mace Utilities Version 1990** back to you.



Owners of any *other* disk utilities program can take advantage of the same offer. Credit card owners can upgrade by calling 1-800-873-4384.

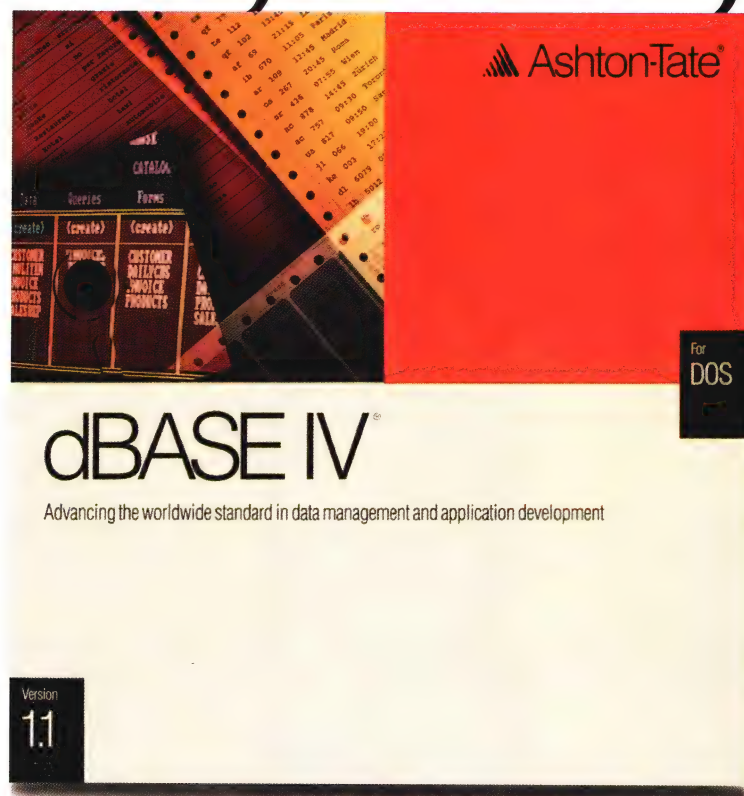
Offer will expire on October 31, 1990.

Circle 81 on reader service card

FIFTH GENERATION SYSTEMS *The Creators of FastBack*

10049 N. Reiger Road Baton Rouge, LA 70809 (504) 291-7221 1-800-873-4384

You Asked. We Listed. Smaller, Faster, More



Introducing dBASE IV®
version 1.1.

Smaller because the new Dynamic Memory Management System (dMMS)™ reduces memory requirements from 516K to 450K. So you can run larger applications.

Faster because the same dMMS reduces dBASE IV's need to access your hard disk. On top of that, the new built-in Disk Caching Option uses extended or expanded

memory to further improve disk performance.

More reliable too. Thanks to one of the largest pre-release (beta) testing programs ever conducted for a PC database.

Tested By Some Very Independent People.

dBASE IV version 1.1 was found to be more reliable in tests conducted by over 2700 independent developers, users and MIS departments. All

together, they used over 1000 different single and multi-user system configurations.

The result of all this is a smaller, faster, more reliable dBASE IV. With a simpler installation to get you up and running quicker.

Which means you can now start working faster and more efficiently than you ever have before.

Especially since you can operate dBASE IV through

ned. Introducing A e Reliable dBASE IV.

the powerful Control Center interface.

Now Anyone Can Use dBASE IV.

The Control Center is powerful because it's so simple. It's like a window to your data that you work with intuitively.

It gives you access to What-You-See-Is-What-You-Get (WYSIWYG) Design Tools that work through simple pull-down menus. The tools let you easily create custom forms, reports, labels and databases—without programming a single line of code. In addition, there's Query By Example (QBE) for quick answers without any programming—even if all your data is spread across multiple databases.

The Design Tools ensure that first time users will be up and running quickly, and that experienced users will realize high productivity gains.

In fact, even beginners can develop complete applications

automatically by letting our Applications Generator easily tie together everything they've created with the tools.

New Developments For Developers.

If you're a developer, you'll appreciate the new language enhancements and more flexible User Defined Functions (UDFs). Plus the Automatic Code Generator, which produces structured dBASE® code for any object you create with the Control Center's Design Tools. In addition, there's the built-in Debugger/Editor for streamlining the program debugging process. If you buy

the Developer's Edition, you'll also enjoy exclusive features like the Template Language—which lets you control the way dBASE IV generates code. And the RunTime Module for free, unlimited distribution of your applications.

Call Us Today. We'll Listen Closely.

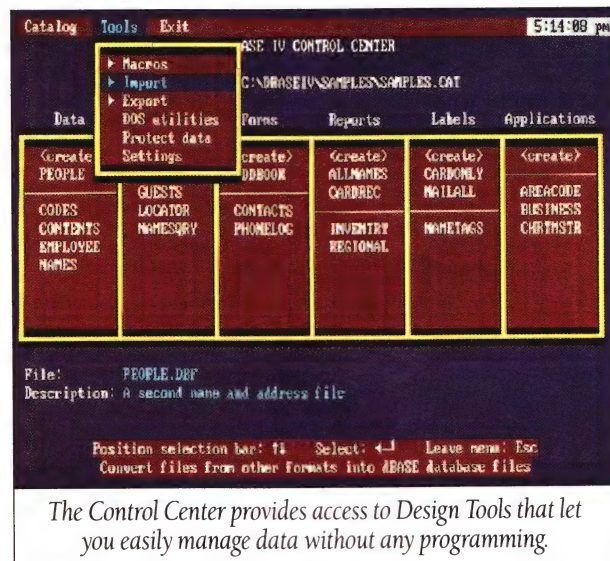
But no matter who you are, you'll appreciate our new support policy.

Free, unlimited telephone support. (Your only charge is your toll call.) So see your Ashton-Tate® dealer today. Or call 1-800-437-4329 ext. 1403 for more information. Better yet, dBASE III PLUS® users can call 1-800-2-ASHTON for an immediate upgrade. Registered dBASE IV version 1.0 users will get a free upgrade.

Call now and tell us what we can do for you.

You can rest assured, we'll be listening.

 Ashton-Tate®



Schumann, vice president of sales and marketing for the firm.

Mix-and-Match Options

None of these alternatives will completely eliminate the need for vendor support, since there will always be questions that only a product's manufacturer or developer can answer. In its own way, though, each can supplement what's provided by vendors and help ensure that you're not stuck staring at a blank screen, waiting for the phone to ring.

SHOP TALK

Making the Best of a Bad Situation

Recently I received a letter from Hewlett-Packard stating that some early LaserJet IIP's have problems with their power supplies. Mine was one of the affected printers, so I called the toll-free number listed in the letter and was given three repair options by a courte-

ous representative. Here's how HP corrected my problem.

My printer was working perfectly, but HP still scheduled a date to ship me a remanufactured machine. The replacement arrived on the date promised and was indistinguishable from a brand-new machine. After moving my accessories to the new machine, I placed my old machine in the shipping container HP provided, closed it with the tape supplied, and affixed the *prepaid* Federal Express label. I have a new warranty, good for one year from the date of the exchange.

I am now considering buying a new computer. I probably would have overlooked the HP Vectra line, thinking it would be too expensive. Perhaps I will reconsider.

Thomas Schreffler
Newton, Massachusetts

Editor's note: According to an HP representative, some of the early LaserJet

IIP printers were shipped out with a faulty power supply that causes premature failure. HP notified users of the potential problem in a mailing to registered owners, as well as in press reports. LaserJet IIP owners who have not been contacted should call 800/233-5153 (in the U.S.) to determine if their unit is affected.

While such defects are unfortunate for all concerned, HP has handled the replacement process with style. Other manufacturers should take note.

Service Worth Writing About

Consumer Watch receives dozens of letters each month from users who are dissatisfied with the service provided by hardware and software companies. It came as a welcome surprise, then, to receive *three* letters commending Plus Development Corporation of Milpitas, California, for its exemplary service and support. In each case, the writer (continues)

SHAREWARE

PC-WORLD says try it! PC-SIG says **\$2.49** each!

O order all of the PC-SIG Disks reviewed in this issue of PCWORLD and pay just \$2.49 per disk. That's right! You've read about them and now you can try them for just \$2.49 per disk for the complete set. If you want less than 10 disks, the price is \$4.99 per disk. That's a savings of \$8.00 over the price is \$3.99 per disk.

Membership Special

For just \$34.95, you can become a member of PC-SIG. You get a one year subscription to Shareware Magazine, the voice of shareware (a \$20 value). Plus you get free technical support and special discounts on the newest shareware available from PC-SIG. In addition we will send you the Encyclopedia of Shareware (a \$22.95 value) FREE. That's a savings of \$8.00 over the suggested retail price of the membership and the Encyclopedia.

Call us today at (800) 245-6717 and ask for operator #2210 to take advantage of these great offers.



+



+



+



=



The World's Largest Distributor of Shareware for the IBM PC and Compatible

- ☐ PKzip, PKunzip v1.101 #364
- ☐ Contact Plus v2.12 #2190
- ☐ Pony Express v1.104 #2246
- ☐ ProComm v4.3 #499
- ☐ QModem v4.2 #310,1022,1023,1483,1484
- ☐ Tapcis #2051
- ☐ File Express v4.32 #287, 288
- ☐ PC-File v5.0 #2082,2083,2084
- ☐ Power Desk v1.26SW #1738
- ☐ Automenu v4.7 #608
- ☐ WYND-DOS v2.0 #1190
- ☐ Fansi-Console v2.000 #356,650
- ☐ 400S v3.02 #1773
- ☐ Newkey v5.2 #181
- ☐ Patricin's Utilities #2275
- ☐ StackKey and BatUtil v3.0 #2207
- ☐ AsEasyAs v4.00 #751
- ☐ PC-CALC+ v2.0 #199, 1016, 1017
- ☐ PC-Type II v1.0 #455, 681, 682
- ☐ PC Write v3.03 #78, 627, 1235
- ☐ Gedit Advanced v2.1 #1783

- ☐ Send me all the disks listed @ \$2.49 ea.
- ☐ _____ Disks @ \$4.99 ea. (less than 10 disks)
- ☐ _____ Disks @ \$3.99 ea. (11 or more disks)
- ☐ PC-SIG Membership @ \$34.95
- ☐ The PC-SIG Encyclopedia of Shareware @ \$22.95
- ☐ 3 1/2" disks add 50 cents per disk
- ☐ The PC-SIG CD ROM (the entire PC-SIG Library) @ \$495.00

Subtotal _____
CA residents add 7.25% sales tax _____
Shipping and Handling **\$4.00**
Total _____

Payment by: ☐ Check ☐ VISA ☐ MC
Card No. _____
Exp. _____ Signature _____
Name _____
Address _____
City _____ State _____ Zip _____

**1030 D East Duane Avenue
Sunnyvale, CA 94086
(408) 730-9291 FAX: 408-730-2107
Toll Free: 1-800-245-6717
Ask for Operator #2210**

Monet, not money.



The HP
PaintJet.
\$1395.*

Who says fine art is out of reach? The HP PaintJet color printer produces brilliant color for a price any business can afford.

So now there's no limit to what you can create



with your business communications. Surprise your audience with thousands of colors. Beamed up on an overhead. Or tucked neatly into a report. Persuading people up to 85% more effectively than black and white.

The PaintJet works with all your favorite graphics, presentation, spreadsheet and word processing software. Just hook it up to your IBM-compatible or Macintosh computer and start painting.

For only \$1395 (add \$125 for the Macintosh interface).

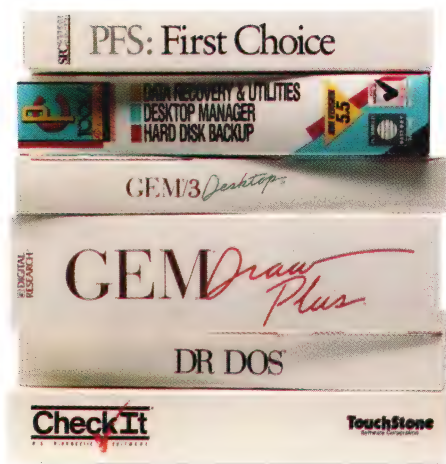
Call 1-800-752-0900 Ext. 711K for your nearest authorized HP dealer and a free sample output. The HP PaintJet. It's what artists are starving for.

There is a better way.

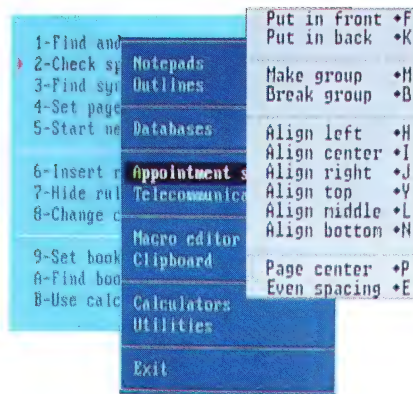


**HEWLETT
PACKARD**

How on earth a reputation



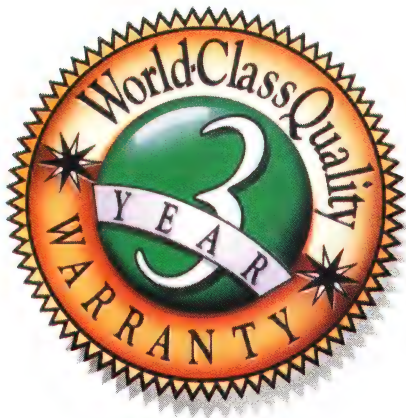
Loads of software,
pre-loaded on hard-disk



Pull-down menus
make it simple



Point-and-click
mouse, included



Great warranty
with on-site service



World-Class Quality
results, fast

are we getting for being easy?

Maybe it's because we make a powerful 386SX™ that's so easy to use. Just turn it on, and you're greeted by a friendly, graphical icon-based interface. No DOS to learn! Click the mouse on any application icon (the software is already loaded and ready-to-run) and you're off to the races. The pull-down menus make productivity quick and easy.

Maybe it's because our fully configured system is so easy to buy. You get all the hardware you need, right down to the mouse. You get enough software to run a business, already loaded on the spacious 40MB hard-disk. Including word processing, graphics, a database, spreadsheet, and utilities to manage all those files you'll be generating. To show off this easy-to-use software, you get a big, crisp, 14" paper-white monitor. To make it all run fast, you get 1 MByte of RAM, which you can easily expand to 8. The result?



You get a system that will run the 32-bit software of the future, at a price that's easy today. Just \$2,495 suggested retail. Complete.

If you ever have questions, we're easy again.

Just call our toll-free answer line for Sun Moon Star owners.

But what makes us look easiest is our World-Class Quality™.

Our Three-Year Warranty* means you don't have to worry about a broken computer. It includes 6 months of on-site service so you can get started with confidence.

We even make previewing our 386SX system easy. Call today, and your free instructional video will be on its way.

Call for your free video and location of an authorized dealer near you.

Hotline: 1-800-952-6300

Dept. U114. Resellers: UR 114



Sun Moon Star makes 386SX easy.



Sun Moon Star™

© Sun Moon Star, 1989. All rights reserved. 1941 Ringwood Avenue, San Jose, CA 95131. Sun Moon Star Canada, SMS Group Canada Inc., 5500 Tomken Road, Unit 8, Mississauga, ON L4W 2Z4. Sun Moon Star, Sun Moon Star World-Class Quality, and the Sun Moon Star logo with the words Sun Moon Star are trademarks of Sun Moon Star. 386SX is a trademark of Intel Corp., PC Tools is a registered trademark of Central Point Software, GEM is a registered trademark of Digital Research. Desktop, Draw Plus and DR-DOS are all trade-marks of Digital Research. Check-it is a registered trademark of TouchStone Software Corporation. *One year warranty on hard disk. Packages and specifications are subject to change without notice.



AnthroCart®

MOBILE ADJUSTABLE INCREDIBLY STRONG



Call for a free catalog: **800-325-3841**

6:30 AM - 5:00 PM, PST

Anthro Co. • 3221 NW Yeon St., Portland, OR 97210 • (503) 241-7113 • FAX: (503) 241-1619

Time to Relax and Unwind

with **FRACTOOLS™**

AN ELECTRONIC KALEIDOSCOPE OF NATURE'S GEOMETRY



FracTools is the ultimate graphics software "toy" for experiencing the infinite and beautiful world of **fractals**. Easy enough for a child to use, **FracTools** opens a window to explore the world of **chaos** science in a vividly visual environment. Rich in animation and special effects, **FracTools** will provide hours, days... of creative and artistic relaxation. Create dynamic and mesmerizing **Slide Shows** that change images, effects and colors, automatically. They would have killed for this in the "Sixties".

"You can think of **FracTools** as the professional's fractal investigation toolbox."

—Dr. Jerry Pournelle - Byte 6/90

Supports **16** color **EGA** and **VGA**, and **256** color **SuperVGA** with multi-synch analog monitor. Requires IBM PC/XT/AT/PS2 or compatible, 512K of RAM, DOS 2.0 or higher, and a hard disk.

Suggested Retail - \$69 To order, call 800-289-1347



Bourbaki Inc.

REvolutionary SOFTWARE

P.O. Box 2867, Boise, Idaho 83701, (208) 342-5849



praised Plus for its friendly and knowledgeable technical staff.

Neil A. Harriman with the University of Wisconsin, Oshkosh, biology department was one who wrote to us about the responsive staff at Plus Development. His problem was diagnosed and corrected quickly and with a minimum of disruption. "Such outstanding customer support and product support should not go unnoticed," writes Mr. Harriman. We agree.

A Dissatisfied Customer

It has been a full month since I returned merchandise to Sefco Computer Products, and I have been unable to get anyone there to see that the refund is processed and a check is mailed to me. In returning the system, I relied on the company's ad, which stated, "If for any reason you're not completely satisfied, return the item for a full refund of the purchase price." I am certainly not satisfied and have called the company to see that a check for a full refund is sent to me without further delay.

W. R. Southern

Southern Temporary Services

Little Rock, Arkansas

Editor's note: Mr. Southern has received a refund from Sefco, minus a 15 percent restocking fee. Although restocking charges are not uncommon in the mail-order business, Sefco's advertisement does not mention such fees on returned merchandise. Given that omission and the money-back guarantee in the ad, Consumer Watch believes a full refund is in order. In the future, Sefco should either reconsider its policy of charging a restocking fee or state it outright in its ads so customers can make a buying decision based on all the relevant information.

Take action! If you've got a complaint or a compliment, send it to Consumer Watch. We'll follow up and publish letters with the broadest interest. For more information, see How to Contact PC World, page 4. ☺

Power Tools for Your PC...

TigerSoftware presents The Complete PC line of professional quality hardware accessories that turns a spare room, a telephone and your computer into a powerful place of business. Add a fax (an indispensable item) to your PC — or your laptop. An internal answering machine can be quickly added to your PC for ultimate convenience and functionality.

Three types of super-sharp scanners (full-page, half-page and hand-held) allow you to easily include graphics and logos into your pages.

The Complete Page Scanner



The Complete Page Scanner can scan images up to 8.5" x 14" at 200 or 300 dpi. View images on screen as you scan. Scale images from 10% to 200%; rotate, crop, erase, and pixel edit images. Your choice of three dithering patterns for scanning photographs. Then export images to the most popular word processing, graphics and desktop publishing programs. Save images in Dr. Halo, PC Paintbrush+, TIFF, GEM, MS Windows Paint, and CPC fax formats.

Prints out on laser or dot-matrix printers. Includes scanner, power cord, interface card, SmartScan™ software, user's guide and 90-day warranty. Optional OCR software.

The Complete Half-Page Scanner/400

Scan images up to 4" x 14" at 200, 300, or 400 dpi with The Complete Half-Page Scanner/400. View images on-screen as you scan. Scale images from 10% to 200%; rotate, crop, erase, and pixel edit images. Your choice of three dithering patterns for scanning in photographs.



Scan An Entire 8 1/2" x 11" Page In Just Two Quick Passes!

Sleek ergonomic design with large viewing window makes it easy to position the scanner accurately on the page. You can export images to the most popular word processing, graphics and desktop publishing programs, or save them in Dr. Halo, PC Paintbrush+, TIFF, GEM, MS Windows Paint, and CPC fax formats. Prints out on laser or dot-matrix printers. Includes scanner, interface card, SmartScan™ software, user's guide and 2-year warranty. Optional OCR software.

The Complete Hand Scanner/400

The Complete Hand Scanner/400 is the ideal personal scanner for desktop publishing. Compact, flexible, and easy to use, CHS/400 is perfect for adding photographs, drawings, logos, and signatures to your word processing and desktop-publishing documents. Scan images up to 2 1/2" x 14" at 200, 300, or 400 dots/inch. View the image on screen as you scan. Scale scanned images from 10% to 200% to fit your page. Rotate, crop, and edit your image or merge together multiple images to create a full page. You can export images to the most popular word processing, graphics and desktop publishing programs, or save them in graphics formats.



The Complete FAX/9600



Also Available in 4800 Baud Mode

Send and receive documents to and from any Group III fax machine. Delayed transmission lets you send unattended fax messages when phone rates are lowest. Broadcast feature sends fax messages to multiple locations with a single command. Automatic redial saves time when lines are busy. Operates in background without interrupting the program you're using. Uses just one phone line for both voice and fax transmission. Includes add-in card with 9,600 bps fax with on-board processor, operating software, user's guide, telephone cord, and 2-year warranty.

The Complete FAX/Portable

This external fax makes it easy and less expensive to fax from hotels, airports — anywhere you travel. It's lightweight and small enough to fit in a pocket! Plugs into serial port and runs on AC adaptor or 9V battery. Send and receives fax messages at 9,600 bps. Delayed transmission lets you send unattended fax messages. Broadcast feature sends fax messages to multiple locations with a single command. Includes plug-in fax unit, operating software, AC power adaptor, RS-232 cable, 25-pin adaptor, telephone cord, user's guide, and 2-year warranty.



The Complete Communicator

PC Computing's Most Valuable Product for 1989 delivers 9,600 bps Group III fax capabilities with advanced telephone answering and message management. The 2,400 bps Hayes-compatible modem can send and receive documents to and from any Group III fax machine even while your computer is running other applications. So versatile you can fax directly from your PC, send to multiple destinations at one time, and schedule transmissions to take advantage of lower phone rates.

Automatic redial saves time when lines are busy. Fax forwarding lets you retrieve faxes from another location using any touch-tone phone. Voice messaging records calls even when you're not there, with remote play-back from any touch-tone phone. Deliver your recorded voice messages to multiple locations automatically, any time of day or night. Even includes convenient ports for The Complete PC Scanners.

The Complete Communicator includes add-in card, operating software, BitCom modem software, user's guide, telephone cord, and 2-year warranty.

The Complete Answering Machine

Answers incoming calls even when you're not there. Digitally records incoming and outgoing messages on your hard disk for improved accuracy and quality. Call in from any touch-tone phone to listen to your messages, or to change your greeting or system configuration.

The Complete Answering Machine can automatically call you at any number to deliver messages. Supports up to 999 individual password-protected mailboxes — one for each of your employees, departments or customers. Each mailbox can have its own personal greeting. Automatically calls and delivers your message to a list of people any time of day or night — keeps dialing until all messages are received.

The Complete Answering Machine can share a phone line with The Complete FAX or The Complete FAX/9600. Operates in the background while your computer is running other programs. Includes add-in card, operating software, user's guide, telephone card and template, wallet-sized quick reference card, and 2-year warranty.

The Complete PC

HW 1715 The Complete Answering Machine	.. \$269.72
HW 1720 The Complete FAX/4800	 \$269.72
HW 1725 The Complete FAX/9600	 \$472.52
HW 1730 The Complete Communicator	 \$607.72
HW 1735 The Complete Hand Scanner/400	 \$168.32
HW 1740 The Complete Half-Page Scanner	 \$202.12
HW 1745 The Complete Full Page Scanner with FREE The Complete FAX/4800!	 \$778.70
HW 1750 The Complete Hand Scanner OCR Software	 \$207.09
HW 1755 The Complete Full Page Scanner OCR Software	 \$347.49
HW 1760 The Complete Half-Page Scanner MAC	 \$337.32
HW 1765 The Complete Full Page Scanner MAC with FREE The Complete Full Page Scanner OCR Software and Omni Page (Save \$1300)	 \$750.35
HW 1770 The Complete Portable Fax	 \$356.79

Call for system requirements.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

Circle 259 on reader service card

OCTOBER 1990 PC WORLD 83

The Incredible Power of the Relational Database without a Single Line of Code!

Use dBASE Data or Create
Your Own Custom Applications
In Minutes!

Consider the database as an amazingly powerful business tool. With Alpha Four you can develop custom applications, manage data entry and verification, easily handle groups of related files from as many as 10 different databases, create professional menus, reports — even paint custom screens — without any programming at all.



No Programming at All? No Way.

You won't type one single line of code. Alpha Four works intuitively to build "smart menus" that can call other menus, execute macros, create temporary variables, and customize data entry and help screens.

And Alpha Four's innovative menus and keyboard shortcuts are faster and more productive than the Assist Mode of dBASE III and the Control Center of dBASE IV. The searching and indexing features extend the power of dBASE and provide sequential searches, index searches, searches by any field, (including memo fields) and multiple searches.

Alpha Four delivers the extensive features of dBASE, along with sophisticated relational capabilities, without the crippling learning curve. Build an index of several databases, then link up to ten files by simply defining a linked set.

"I Need Detailed, Complex Reports..."

Just name it. Quickly define the sections (or bands) of your report, the title, up to nine subgroupings and a summary. Text is handled for you with a host of advanced features. Or, if you're up against a tight deadline, Alpha Four can create reports for you, using its Quick Report option. Of course, Alpha Four imports and exports Lotus 1-2-3, dBASE II, ASCII and other file formats in a flash.

TECHNICAL NOTES: Alpha Four Scores Big!

Tiger has looked at other relational databases and finally found one worth

carrying. All others have either been too complicated or not powerful enough. Alpha Four offers the perfect mix. We were able to import a 2MB ASCII file, for example, and quickly post price changes on a monthly basis with about 8 keystrokes!

Database Specifications and Field Types

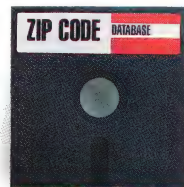
- 128 fields per record; 4,000 characters per record
- 2 billion records per database
- Databases per disk limited only by disk capacity
- Field types: Character, Numeric, Date, Logical, Memo

FREE With Alpha Four Teacher In A Box!

Teacher In A Box for Alpha Four will show you everything you need to effectively and efficiently work with Alpha Four. Using a multi-media approach that combines audio tape, written support and computer examples, Teacher In A Box is a powerful package that will show you the ins and outs of Alpha Four.

TIGER BONUS! A Complete Zip Code Database!

Includes 41,000 zip codes and corresponding cities and states — completely cross-referenced for automatic fill-in. A great addition to Alpha Four. A \$49.95 value — yours FREE!



HW 3630 Alpha Four 5 1/4" & 3 1/2" \$349.00
IBM PC, XT, AT, PS/2 & compatibles. Requires 512K; hard drive.

Dazzling Maps of the U.S. and the World — Plus Facts, Figures, Stats and More!

Bring the Entire Globe
To Your PC Screen.

This innovative program brings the entire globe to your computer screen, combining a complete atlas, almanac and world fact book into one exciting, informative package. You'll have instant access to over 240 fully detailed, EGA/VGA color maps along with a vast database of useful international information. You'll explore the geography, people, government and economy of any nation on Earth, including such details as climates, coastlines, population, language, labor force statistics, military

strength, inflation, industry, highways and waterways, and much more.

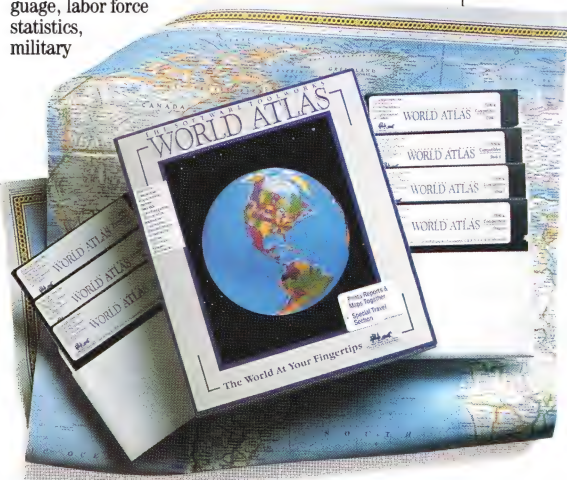
Indispensable Guide and Reference Tool.

World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. It's an indispensable guide that brings together all types of important information that would take months to research. With just a couple of keystrokes any bit of data is on your screen. And World Atlas includes a special travel section, containing information of particular interest to travelers that includes information on topics such as monetary conversion rates, seasonal facts and language.

World Atlas is very easy to use. You don't need to learn lengthy commands. Just point to a country on any index map, click — the desired map appears instantly. From there, simply select specific information and statistical maps for individual countries from sleek, drop-down menus. You can easily print customized reports mixing maps and text — even export maps to desktop publishing programs for use in your newsletters, reports and other publications.

World Atlas contains three types of maps: thematic, reference and regional relief maps. These maps provide a wealth of knowledge about any area you'd like to explore. There's also volumes of comparative data on every country in the world in five subject areas: geography, people, government, economy, and communications.

And all information contained in World Atlas is obtained from world organizations and U.S. Government sources for up-to-date accuracy.



NOW AVAILABLE! U.S. ATLAS

U.S. Atlas brings the entire North American continent to your computer screen! Simply click on a state, county or even a city to explore such information as: population, average temperatures/precipitation, latitude/longitude, local time, area codes and zip codes. What's more, everything you need to know will be displayed in easy-to-read windows.

All the information you could possibly want is as easy as "point-and-click." Fully-detailed, EGA/VGA maps (the kind you never thought possible on a PC!) pop up instantly. The Software Toolworks U.S. Atlas is the perfect simple-to-use almanac, atlas and U.S. fact book in one! Great for business people, librarians, travelers and students of all ages.

Export Impressive Maps to Your Graphics Programs.

Print state reports with maps and text, graph data from your maps or rework your information with special database updating capability. Export your favorite maps to any graphics program that accepts .PCX and TIFF file formats. Add notes to map text with a special "notepad" feature.

Without a doubt, U.S. Atlas is the complete U.S. map software. It's like America at your fingertips.



HW 2570 World Atlas 5 1/4" & 3 1/2" \$59.95
HW 2560 U.S. Atlas 5 1/4" & 3 1/2" \$49.95
IBM PC or compatibles with 640K. Hard disk; EGA or VGA graphics card color monitor; Microsoft mouse or compatible.

FEDERAL EXPRESS

To Order: Call Toll-Free (800) 888-4437
Circle 259 on reader service card

International Orders: (305) 443-8212

The Premier Grammar, Style and Punctuation Checker for the PC!

ALL-NEW VERSION
4.0
OVER 1,000 NEW RULES!



RightWriter Helps You Produce Clear, Powerful Writing.

Remember the last time you read someone else's badly written letter?

How did it reflect on him? Now ask yourself a more important question. How does your own writing reflect on you? Successful people communicate clearly... and powerfully. RightWriter is an intelligent system that flags common errors in your writing and helps you produce clean, crisp letters and proposals — applying 5,500 rules of grammar, style, usage and punctuation to letters, reports, proposals, press releases and more!

And now RightWriter is fully compatible with Microsoft Word for Windows and Q&A Write.

Works With Just a One-Word Command!

RightWriter is the most accurate system for business and technical writing. RightWriter analyzes documents produced by leading word processors for errors in grammar, style, usage, and punctuation. Using more than 5,500 rules, RightWriter helps make your writing clear, concise and powerful. Just create your documents as you normally would, then, with a one-word command, RightWriter will check your document and display errors and comments. RightWriter never changes your writing... it only makes recommendations.

A Business Productivity Tool.

RightWriter can pay for itself with a single, well-written sales letter, proposal, report, or manual. Strong, clear writing can make the difference between making or losing a sale. Good writing is good business. RightWriter is also an ideal teaching tool. As it helps you improve a document, RightWriter also trains you in the principles of proper English.

Version 4.0 Features

- It's easier to use, because it has only one command. Your word processor does the rest.
- Inserts messages directly into the text to point out problem areas in letters, proposals, reports.
- Now runs from within WordPerfect, MultiMate, Microsoft Word, WordStar, Professional Write and Q&A Write.
- Indexes measure strength of delivery, readability, use of adverbs, adjectives, jargon.
- Uses more than 5,500 rules to make recommendations.
- New Menu System allows you to customize RightWriter to meet your particular needs.

Now Runs From Within Six Major Word Processors.

RightWriter's direct interface works within the six major word processors: WordPerfect, MultiMate, Microsoft Word, WordStar, Professional Write and Q&A Write.

Specific Recommendations RightWriter flags common writing errors such as passive voice, noun-verb agreement and more.

Readability And Strength Index The Readability Index shows the educational level a reader requires to understand your writing.

Parts of Speech, Sentence Structure Other indexes measure your adjective and adverb usage, and use of jargon. Recommendations guide you in how to improve your sentence structure.

Words to Review The Words In Review list points out problem words that could cause confusion.

RightWriter vs. The Competition.

Dr. Cynthia L. Selfe, Associate Professor of the Humanities Department at Michigan Technological University independently tested the big three grammar and style checkers. The results? — RightWriter wins hands down!

Researchers at Michigan Technological University tested the three IBM PC-based grammar and style checkers. The following is an excerpt from the letter which accompanied their findings...

"We've finished our independent tests comparing the performance, accuracy and usefulness of RightWriter 3.1, Grammatik and Perfect Grammar on two separate documents: one ("Testbed") that you have sent to us and another ("Ties") that we selected independently.

As you can tell from just a quick glance at the enclosed tables, RightWriter impressed us as far as style-analysis programs go: RightWriter correctly flagged 176 errors (with a total error rate of only 8 percent) in an essay that saw more than twenty major revisions.

RightWriter has such a low error rate that the program rewards users instead of overwhelming them. RightWriter's manual was also both easier to read and more informative than either Grammatik's or Perfect Grammar's. Finally, RightWriter's problem explanations form a good refresher course in grammar and style.

We believe RightWriter would be of value to writers interested in improving the surface structure of their writing. We applaud RightSoft's attempts to test their products thoroughly and in realistic situations; your company has a couple of fans in Houghton, America.

Sincerely, Dr. Cynthia L. Selfe."

Associate Professor, Humanities Department
Michigan Technological University, Houghton, Michigan

Which Grammar Checker Would You Trust?

Results for Test Document 1	RightWriter	Grammatik
Total Flags*	4124	1290
Correct Flags*	4065	1118
Incorrect Flags**	59	172
Error Rate	1%	13%

Results for Test Document 2	RightWriter	Grammatik
Total Flags*	201	182
Correct Flags*	174	118
Incorrect Flags**	27	64
Error Rate	13%	35%

*A higher value is better. **A lower value is better.

TEST NOTES: Flags were identified as "incorrect" if the program suggested textual changes where none were required or each time a program flagged a compound adjective as possibly misspelled when the word was punctuated correctly.

RIGHTSOFT®

HW 2860 RightWriter 5¼ & 3½ (Dual) ... \$79.95

HW 2870 XENIX/UNIX \$295.00

Runs on IBM PC, XT, AT and compatibles with 384K. Hard disk or floppy.



Compatible With These Word Processors:

Bank Street Writer®
Edit/Wordz®
Enable®
HomeWord II®
IBM Writing Asst.®
Leading Edge®
Microsoft® Word
Microsoft® Works
Microsoft® Write
Multimate Adv.®
Multimate®
New Word®
OfficeWriter®
PC-Writer®
PeachText®
p/s: Write®
p/s: Prof. Write®
p/s: First Choice®
Q&A Write®
Samna®
SideKick®
WordPerfect®
WordStar®
WordStar 2000®
VolksWriter®
XyWrite®
All Standard
ASCII Editors

The Original Document...

The current status of dealer sales is terrible. Our traditional dealer sales strategy does not seem to be working. Current sales figures seem to be indicative of a major problem. In view of the fact that the entire company's future depends on dealer sales, this problem must be acted upon expeditiously to develop a multiplicity of solutions to overcome the problem (e.g. better point of sale material, more market research, more support by reps, etc.).

Sincerely,
Rob Smith

RightWriter's Analysis...

The current status of dealer sales is terrible. Our traditional dealer sales strategy does not seem to be working. Current sales figures seem to be indicative of a major problem. In view of the fact that the entire company's future depends on dealer sales, this problem must be acted upon expeditiously to develop a multiplicity of solutions to overcome the problem (e.g. better point of sale material, more market research, more support by reps, etc.).

OVERALL CRITIQUE FOR: test
READABILITY INDEX: 11.39
Readers need an 11th grade level of education to understand.
STRENGTH INDEX: 0.00
The writing can be made more direct by using:
-the active voice
-the shorter sentences
DESCRIPTIVE INDEX: 0.61
The use of adjectives and adverbs is within the normal range.
JARGON INDEX: 0.42
The writing contains a good deal of jargon.
SENTENCE STRUCTURE RECOMMENDATIONS:
14. Consider using more passives.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

Circle 259 on reader service card

OCTOBER 1990 PC WORLD 85

The Fastest Remote Computing; Detailed System Status & Diagnostics.

CO/SESSION...

Operate Any Computer Anywhere in the World — By Remote Control!

CO/SESSION allows you to quickly connect your computer to a distant PC (on a phone line) and run that remote computer as if you were right there — at the keyboard! From a laptop in a hotel room, you can control your PC back at the office — even if it's more powerful — provide training, or troubleshoot a customer's system from your office.

You can even print documents on either, or both systems simultaneously. And Co/Session 4.0 includes an all new "windows-like" interface for speed and convenience, plus error-checking, seven advanced new security features, EGA, VGA and Hercules support (for graphics) and much more.

Easy to Use.

The best package available for remote computing,



remote customer support, background file transfers and remote network access. Easy to use — just install it — Co/Session sits in the background using only 51K. Use hot keys to quickly call up Co/Session on either the host or remote PC.

Advanced Security.

Co/Session protects your data with features like: dual-passwords, password-checking and data encryption. You can restrict the ability to send or receive files on the remote PC, blank the other computer's screen — even disable its keyboard to prevent unauthorized access.

Fastest Remote Software Available.

Co/Session transfers files up to 20% faster — updates screens up to 400% faster than competitors! In fact, Co/Session was proclaimed "Fastest Remote Software Package" by *InfoWorld* in March, 1989!

And Co/Session is fully compatible with all leading software like Lotus, WordStar, WordPerfect, dBASE IV, and SideKick.

SYSTEM SLEUTH... Discover Hidden Configuration Details Inside Your PC!

System Sleuth is an easy-to-use, advanced "passive diagnostic" system that probes deep into the heart of your PC, illuminating secrets (and pitfalls) — without damaging your precious data. Extensive helps screens aid in understanding how your computer works — and why it won't! System Sleuth also gives you the information necessary to make smart configuration decisions when adding new hardware and software — maximizing its performance — and avoiding conflicts.

In addition, System Sleuth helps you avoid needless

repair bills and provides details that can be helpful when obtaining technical support from hardware and software manufacturers — your system status is displayed right on the screen.

You'll have instant access to information on processor and card types, BIOS date, DOS version, ports used and memory installed, including a complete rundown of what's contained in each 64-Kbyte segment up to 1 MByte. Display TSRs loaded, their functions and memory allocation, interrupt vector tables, device drivers loaded (and attributes) and disk information (including bad tracks).



Also Available, WinSleuth for Windows

An all new version of System Sleuth for Windows 3 protected environment. The familiar reporting features of System Sleuth are available as well as many new analysis tools for Microsoft.

TIGER EXCLUSIVE OFFER SYSTEM SLEUTH FREE WHEN YOU BUY CO/SESSION

TRITON	
HW 3800 Co/Session & FREE System Sleuth	
5 1/4" & 3 1/2"	\$229.00
HW 3830 Session/XL 5 1/4" & 3 1/2"	\$95.00
HW 1060 System Sleuth 5 1/4" & 3 1/2" ...	\$99.00
HW 1065 WinSleuth 5 1/4" & 3 1/2"	\$99.00
IBM PC, XT, AT, PS/2, compatibles with 256K (host PC requires 50K).	

Expand Your Power and Control Over Lotus 1-2-3 Macros!

Go Inside and Diagnose
Any 1-2-3 Macro Error!

Many PC users all over the world have come to realize the power of Lotus 1-2-3. Not only is it a great spreadsheet program, its macros make it a powerful computing language unto itself. Anyone who knows 1-2-3 quickly realizes you don't know 1-2-3 until you know how to do macros. 1-2-3 macros let you automate a whole range of tasks that save time and energy. They make Lotus 1-2-3 the revolutionary program it is.

But 1-2-3 macros, like any programming language, have their special characteristics that turn little syntax errors into monstrous problems. Everyone who uses 1-2-3 macros undoubtedly knows the frustrating ERROR message that inevitably crops up when you're trying to run a new macro. Even the best 1-2-3 macro developers run into snags when putting together a macro.

The Macro Solution.

Until now, the only answer for those frustrating situations has been invoking the 1-2-3 STEP mode. You start at the beginning and poke along until an error message pops up on the screen. After you've figured out what's wrong, you go back to the beginning and start all over again. To make matters worse, if your macro contains the [WINDOWSOFF] and [PANELOFF] commands, you're sailing in the dark. There's nothing more frustrating than trying to get a job done with a macro you can't get to work and having no help with it. On routine 1-2-3 questions, you can ask whoever is around for help or call technical support. With macros, you either find an expert or you can just give up.

Now, there's a better way — the Personics Macro

Editor/Debugger (MED), an enormously powerful, truly interactive, and genuinely easy-to-use tool for developing, debugging, and maintaining 1-2-3 macros. As soon as you find a problem with one of your macros, just pop up the MED debugger window and quickly find out what you need to change. The Personics Macro Editor/Debugger will become your private technical support line, immediately available whenever you need it.

No Need To Be Frustrated Any Longer.

You'll be amazed at how much more productive you'll be with MED in your tool kit. When an error condition is identified in MED's debugger window, you can jump to the editor window, quickly make a change, then resume execution where you left off. And MED's expanded error messages give you the information you need to understand why your macro errors have occurred. Each error message is also described in depth in MED's detailed handbook. From now on, if you have a problem with a macro, you know where to turn.

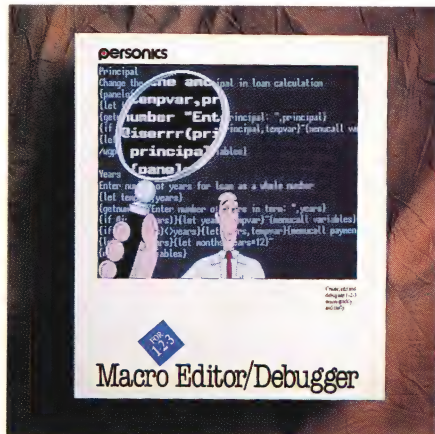
With the Personics Macro Editor/Debugger, you won't dread attempting long 1-2-3 macros because you're afraid they won't work. You can track down even the most elusive macro problems simply and easily and then know how to fix them. You can start macro execution anywhere and follow along at a choice of speeds or set watchpoints to monitor important variables. With MED, you can set breakpoints to halt execution when a user-defined condition is met. Each of the Personics Macro Editor/Debugger's features are designed to make developing and debugging your macro jobs as easy as possible.

Fast, Effective, and In-Depth.

Sometimes, you have to play doctor with a software package like Lotus 1-2-3 to get the most out of it. Should I

have done this in my macro? Or should I have done that? Sometimes, being the best doctor isn't enough to diagnose the problem with a complicated macro. That's when MED comes in.

The Personics Macro Editor/Debugger is receiving wide praise for its effective way to shortcut 1-2-3 macro errors. "No serious macro developer should be without this tool," says noted macro expert Scott Tucker. The Personics Macro Editor/Debugger — your complete diagnostic kit for 1-2-3 macros.



personics	
HW 2830 (MED) 5 1/4" & 3 1/2"	
IBM PC, XT, AT, PS/2 and compatibles. MED works with 1-2-3 Release 2.0, 2.01 and 2.2 and uses approximately 65K of RAM. If you are using 1-2-3 Release 2.0 or 2.01 and MED is your only add-in, you'll need approximately 20K of RAM for the 1-2-3 Add-In Manager.	

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

Circle 259 on reader service card

Don't Make a Quick Decision — Get the Accounting System with Room to Grow...

Money Matters for Small Businesses That Are Quickly Becoming Large Businesses.

Accounting software for home and small businesses must be two things: 1. Easy enough to get started on right away, and 2. flexible enough to ADAPT TO THE USER'S SITUATION, then grow as they become more experienced and demanding. If both these elements aren't present, the accounting system simply won't be useful.

Money Matters is a less complicated approach to financial management for the home and small office. It combines fast, on-screen transaction handling, instant balance updates, simple check writing, invoicing and detailed financial reporting.

The beauty of Money Matters is that it actually adapts its functionality to the way you run your business, instead of cramming some complex accounting concept down your throat. If you're a contractor, for example, you can easily track costs and hours for each phase of a project. If you own a fleet of taxicabs, you can track income and costs by cab. If you run a small retail store or factory, you can track inventory any way you like for complete financial control.

Get Started Right Out of the Box. Set-up is Done for You.

You don't have to know anything about accounting to become instantly productive with Money Matters. There are no time-consuming set-up procedures or accounting techniques to learn. Choose from 14 pre-defined business categories. When you select one, the account tables are automatically established. Quickly enter starting data into Money Matters' handsome interface and from then on, each function is as easy as writing a check.

The Fastest, Easiest Checkbook Management Concept Ever!

No other software program is as thorough in this area as Money Matters. Payments, deposits and reconciliations can be made automatically, and transactions can be distributed in up to 20 different ways. Money Matters will automatically track and report interest income for you and provide balance sheets, management reports, invoice analysis reports and up-to-the-minute profit and loss statements.

When tax time rolls around Money Matters is there with complete, organized information. And Money Matters automatically monitors credit card and bank account transactions, to help you forecast your cash requirements.

Take Care of Your Customers.

...And your vendors. Money Matters can easily handle up to 4,000 vendor and customer accounts. Track year-to-date figures, print mailing labels, lists, and reports.

Take Care of Your Company.

You'll collect receivables sooner because Money Matters helps you stay better organized so invoices go out on time ... stay on top of late payments ... even automatically add finance charges if you want to. You'll improve your cash flow because you can establish budgets and stick to them. And you can take advantage of vendor discounts automatically. Payroll becomes a snap. Money Matters takes care of computing taxes, writing the checks, completing quarterly reports and more with just a keystroke.

"Money Matters Sounds Great — But My Business Is Different..."

Money Matters was designed around the notion that all businesses are unique, each with a different set of procedures and situations. Because it is so flexible, you can tell Money Matters how you prefer to work and it follows your lead, adjusting to your set of requirements.

Money Matters Can Do All of These Jobs for You, While You Run the Rest of Your Business:

- Invoicing/Billing
- Check Writing
- Financial Reporting
- Receipts/Deposits
- Bank Reconciliations
- Automatic Payments
- Payroll Tracking
- Tax Information
- Inventory Control
- Job Costing
- Budgeting
- Personal Financial Management
- Sales Tax Calculations
- Credit Card Accounting
- Transaction Histories
- Expense Analysis
- And Many More

**Dozens of built-in
formats to get you
up and running right
out of the box!**

Money Matters Features:

► Easy Set-Up

- 14 pre-designed business categories to choose from
- Account set-up done automatically
- Short-Cuts section
- Easy to enter starting balances
- Customized account names, titles, numbers
- Provides for departmental accounting or subcategories

► Checkbook Management

- Automatic payments
- Automatic bank deposits
- Bank reconciliation
- Distribute transactions 20 ways
- Easy edit & void feature
- Tracks interest income

► Special Tasks

- Organizes tax information
- Profit & Loss
- Optional balance sheet
- Management reports
- Invoice analysis report
- SuperTrack reports
- Automatic budgets
- Provides on line account activity reports
- Detail retained for prior period adjustments

► Invoicing

- Prints three types of invoices
- Maintains up to the minute bank balances
- Calculates finance charges, due dates, and discounts automatically

► Customers/Vendors

- Holds up to 4,000 vendor & customer cards
- Evaluate vendor & customer accounts

- Track year to date figures
- Print mailing labels, lists & reports
- Store name, address & telephone numbers

► Bank Accounts

- Handles up to 15 bank accounts & credit cards
- Includes checking, savings, money market and more

► Forms

- 3 styles of invoices
- 2 styles of checks
- Receipts
- Mailing labels
- Supports laser forms

► Short-Cuts

- Pop up lists of vendors, customers
- Pop up list of accounts
- Speed Search feature
- Find key
- Macros for repetitive entries

► Reports

- Optional Balance Sheet
- Income Statement
- Check or Receipt Register
- Account Analysis Report
- Vendor/Customer Analysis Report
- SuperTrack Reports

FREE SHIPPING
FEDERAL
EXPRESS
800-888-4437



**Money Matters
is the perfect
accounting package
for 1-5 person businesses.
Spend your time doing
what you do best.**

BONUS OFFERS!

Get @ Accounting™ FREE! When You Purchase Money Matters

@ Accounting provides a seamless interface between Money Matters and Lotus 1-2-3 Release 2.2 allowing you to automatically send financial information to a complete spreadsheet including headings, formulas and your data. Save time and increase accuracy with this easy-to-use feature. You'll now have additional reporting capabilities such as budgeting and forecasting trial balances, trend reports, financial ratios, and more. (A \$ 95.00 Value)

LIMITED QUANTITIES! FREE Business Week Business Advantage* When You Purchase Money Matters

An amazingly real big-business simulation system that puts you at the helm of some of the nation's top corporations such as Chrysler and Compaq Computers. You call the shots, make the tough decisions and take your place among the "Captains of Industry." A \$59.95 value!

Limited quantities — offer good while supplies last.

Great American Software, Inc.

HW 1210 Money Matters 5 1/4" & 3 1/2" \$89.95
HW 1215 @ Accounting \$ 95.00
IBM, PC, XT, AT, PS/2 or compatible, MS-DOS or PC-DOS, 2.1 or higher, 512K RAM and hard disk. Printer — parallel or serial, 80 or 132 column, impact or laser. 640K required with @ Accounting.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

Circle 259 on reader service card

International Orders: (305) 443-8212

OCTOBER 1990 PC WORLD 87

Pointing Devices for Normal Human Beings.

*Ruggedly Crafted,
Incredibly Accurate and
Surprisingly Affordable.*

Before the days when mice were associated with PC use, who could have imagined that a small electronic pad with a little ball would revolutionize the way we use computers?

But PC applications have become more sophisticated today and the benefits of high-speed, sophisticated pointing devices become more and more apparent. That's why the Logitech Mouse and TrackMan were designed.

Slick and precise, the Logitech Mouse and TrackMan deliver pinpoint accuracy and speed in a variety of applications. From spreadsheets to desktop publishing to CAD and other input intensive applications, you know you have the best with the Logitech TrackMan and Mouse. Try them with Logitech's Finesse desktop publishing software and you'll see how powerful your PC can be.

Speed Into the High-Tech Age with TrackMan.

Trackman is Logitech's high resolution stationary mouse. More than a trackball and more than an ordinary mouse, TrackMan is a pointing device in a class of its own, giving you all the advantages of mice and trackballs in one product. Rest your hand on TrackMan and you'll understand how revolutionary it is.

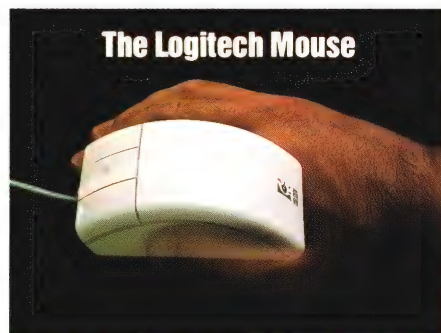
With a perfect fit for the human hand, TrackMan offers more ease, comfort and productivity than any pointing device you've ever used. You rotate the TrackMan ball with your thumb and click with any of the three buttons. Resolution is adjustable from 50 dpi to 15,000 dpi. TrackMan comes with a super-efficient set of utilities, including LogiMenus, which gives you a TrackMan-based menu system, and Mouse-2-3, which works with Lotus 1-2-3, Releases 1 and 2. Both LogiMenus and Mouse-2-3 will speed up your applications.

Imagine how fast you'll be able to move through a big spreadsheet or your desktop publishing work with TrackMan. And since it's designed to exactly fit the shape of the human hand, TrackMan will eliminate the discomfort that comes with using other non-ergonomically designed pointing devices. The three buttons give you great flexibility and the great utility software will make you so much more productive.

Besides, TrackMan uses less desk space than conventional pointing devices and is guaranteed to be compatible with all of your IBM or compatible software. With that kind of guarantee, comfort, and innovation, you can't pass up the Logitech TrackMan!

A Speedy Demon.

The Logitech Mouse, thoughtfully engineered and scientifically designed, uses 62% less desk space than standard mice. The Logitech Mouse is perfect for applications from CAD to desktop publishing because of its Intelligent MouseWare Utilities, that automatically adapt to your immediate needs. In fact, Logitech is so sure the Mouse will work with your software they guarantee it.



A best-seller. A top performer.

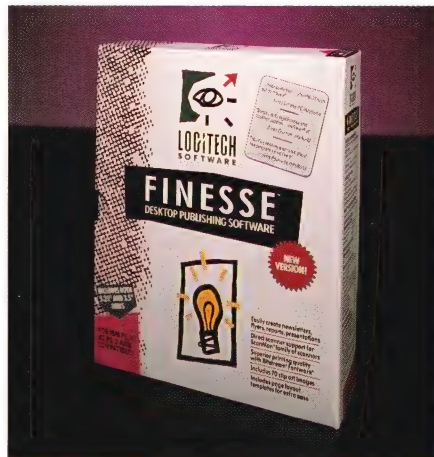


Included in the Mouseware Utilities is software that lets you adjust the resolution as low as 50 dpi for increased precision or higher than 19,000 dpi for extremely high speed, the LogiMenu mouse menus which speed up keyboard-based applications, and Mouse-2-3, which sets new levels of ease and performance for Lotus 1-2-3 Releases 1 and 2.

Also included is Pop-Up DOS, the ultimate mouse-based shell which replaces unwieldy DOS commands with a fast, modern point and click environment. Manage your system, run applications, and use the built-in calendar, editor, card file and calculator with just the press of a button.

World Class Desktop Publishing.

If you're like most first time Finesse users, you'll be amazed when you first load Finesse and see the easy-to-use pull down menus. Almost intuitively, you will open a document window, where you can import your word processing files with a single click of the mouse. Or, type right into Finesse. Either way, what you see on the screen is exactly what prints out. No more guessing. As if that is not enough, you can use your Logitech Scanman Plus to scan images directly into Finesse without ever leaving the program.



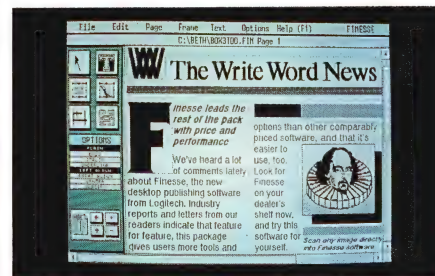
Imagine, your year-end report is almost complete. You find a picture that perfectly illustrates your point. Scan it and 10 seconds later that picture is part of your document.

Finesse's features include text wrapping around graphics, cutting and pasting, scaling and cropping, kerning and leading, variable gutter and column widths, on-screen rulers with cursor indicators, preview mode, and a variety of quick keys.

Supported printers include the Epson LQ Series; HP LaserJet, LaserJet Plus, LaserJet Series II, DeskJet, and PaintJet; IBM and Epson High Resolution Printers; IBM Proprinter; and PostScript Printers. Finesse also comes with 5 Bitstream type families.

With dozens of more great features, Finesse is gaining wide praise in the industry. "...Near perfection... you should rush out and buy it," says PC Magazine. "Simplicity, thoughtfulness and scanner support... well worth it," say InfoWorld. In fact, Logitech is so sure you'll love Finesse, they'll buy it back from you if you're not satisfied. And send you a T-shirt to boot. At this exclusive Tiger price, how can you resist Finesse?

- Create documents up to 99 pages
- Sharp, clear printing quality
- Wrap text around graphics automatically
- Automatic hyphenation





HW 2905 Logitech Serial Mouse		\$85.00
HW 2910 Logitech Bus Mouse		\$95.00
HW 2915 Trackman Serial		\$99.00
HW 2920 Trackman Bus		\$105.00
HW 2925 Serial Mouse w/Finesse		\$129.00
HW 2900 Finesse Dual Media		\$95.00

TrackMan: IBM PC, XT, AT, PS/2, 1 RS-232 serial or bus port, 256K RAM, DOS 2.1 or higher, dual floppy drive or one floppy drive and a hard disk. **Logitech Mouse:** IBM PC, XT, AT, PS/2 and compatible computers; DOS 2.1 or higher; dual floppy drive system. **Finesse:** IBM PC, XT, AT, PS/2 and compatibles, 640K RAM, DOS 2.1 or later (3.1 or later for Bitstream Fontware), one floppy drive and a hard disk.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

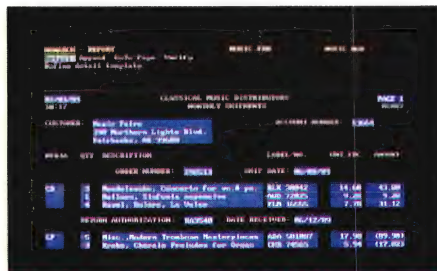
Circle 259 on reader service card

Now You Can Download Reports From Any Mini or Mainframe and Bring the Data Alive on Your PC!

Turns a Report File into a Ready-Made Database.

Consider for a moment the vast ocean of information that governments, corporations and other organizations around the world accumulate, store and manage. Every day, billions of bytes of new information are added to the pool. If handled with thoughtful care, this information can be a priceless resource.

The sheer volume of information demands a mainframe or mini-computer for data storage. But here's the paradox: All the best tools for data analysis are on the PC. PC users who need to get their hands on the data cannot gain access to it. They must sift through stacks of printed reports to find what they want. Now, for the first time, there's a remarkably intuitive new tool to help PC users bridge the data gap.



Monarch reads report files and extracts the data. Here, the extraction template overlays the report.

Existing Reports Become Valuable, Ready-Made Databases.

Monarch reads computer-generated reports and extracts the data! To understand the magic of Monarch, picture all the reports that come across your desk. All those cost summaries, transaction reports, customer lists, asset schedules, payroll reports and more. Think of flipping through all those pages trying to understand what's going on. Imagine trying to rekey all that data into your spreadsheet for analysis. With Monarch, the data comes alive.

Monarch can read any report downloaded from a mainframe or mini-computer. (Or generated on a PC.) It extracts data from the report file and serves it up any way you want. You can see it, sift it, select it, summarize it and send it out to your spreadsheet, word processor, graphics package or database manager. Monarch can read any report stored on disk, including ASCII files, TXT files, PRN files and SDF files.

CASE STUDY: The Agony of Printed Reports...

Suppose you've got a 500-page customer activity report that's been downloaded from your company's mainframe. You've been asked to analyze sales trends, but you don't want to spend hours digging through the printed report. Monarch allows you to automate the analysis by turning the report into a live database.

Here's how it's done. Simply load the customer report file into Monarch, quickly define a data extraction template, and then explore the report using powerful data analysis commands.

Turns a Report File into a Ready-Made Database.



You can tell Monarch to show you all the sales transactions for a particular customer, product, salesman or region. Then produce crosstab summaries that show the field totals and record counts broken out in a variety of useful formats. Data and reports can be output on a printer, or exported to applications like Lotus 1-2-3.

personiks

HW 1002 Monarch 5 1/4" & 3 1/2" \$495.00
IBM PC, XT, AT, PS/2 and compatibles with 512K. Hard disk recommended.

Instantly Calculate and Analyze Mortgage Rates, Present Values, Amortization and Variable Rates...

Calculate Swift Answers to Complex Financial Questions.

This speedy financial tool allows you to quickly enter information about anything from annuities to loan balances to amortization schedules — then, using a sleek interface, PercentEdge will calculate and present a custom analysis of any specific financial transaction.

Using PercentEdge, you can quickly develop alternative structured settlements to fit your client's needs. Or instantly calculate the present value of losses or gains during periods of fluctuating interest rates. Create an unlimited number of alternative financing options for any negotiated purchase. Great for determining the smartest way to finance a house, automobile — any investment.

Once you've got the numbers, you can crunch with flexibility and superior interactivity. Like calculating multiple balloon payments, unlimited "what-if" scenarios, and comparing several scenarios — simultaneously on your screen.

PercentEdge can also be used as a personal finance tool. For instance, an individual can estimate the maximum affordable price for property, evaluate a car loan, compare financial benefits of a variety of investments, or design a savings program for a child's education.

PercentEdge is the only financial software capable of operating in two modes. Run PercentEdge as a RAM-resident program for "pop-up" convenience, or as a full application for extensive financial work.

How Much Can I ACTUALLY Afford?...

Mortgages can be tricky. Now real estate profession-

als, as well as first-time buyers can — in seconds — calculate the maximum affordable price of a property. Just give PercentEdge the monthly budget, the interest rate, the life of the loan and the downpayment. Bang! You'll get the number. If there are special considerations such as multiple balloon payments or variable interest rates over the life of the loan, just enter it into the Mortgage Screen and PercentEdge instantly recalculates and gives you the revised values.

Wondering About Present Values?...

Questions about a pension plan, annuity or other time/value calculation? By leaving the appropriate boxes or cells blank on the Present Value Screen, and filling in the known data, you can compute rates, dollar amounts, and dates. You'll have an accurate answer in seconds.

Easy Amortization Schedules...

The Amortization Screen shows you how a loan will be paid back over time. These calculations can be helpful in determining figures for tax returns and financial statements. It simultaneously creates an amortization table to show the outstanding principal owed, the principal paid each period, the interest of each period, and the interest to date. The amortization table can be printed directly, saved as a text file, or saved as a Lotus®-formatted file for inclusion in a 1-2-3® spreadsheet.



Examined by KPMG Peat Marwick in accordance with AICPA attestation standards.

TIMESLIPS CORPORATION

HW 1240 PercentEdge 5 1/4" \$99.95
HW 1245 PercentEdge 3 1/2" \$99.95
IBM PC, XT, AT, PS/2 or compatibles with 320K.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

Circle 259 on reader service card

International Orders: (305) 443-8212

OCTOBER 1990 PC WORLD 89

Open and Run Twelve Programs at Once — Just Switch Between Them! New Software Carousel Release 4.0!

*Instantly Switch Between
Up to 12 Different Programs —
Software Carousel Eliminates Saving,
Exiting, and Retrieving Forever!*

An All-New Software Carousel!

Imagine switching programs on your computer as quickly and easily as you change channels on your TV! No more 10 step routines just to exit one program to work in another. Just switch and you're in your spreadsheet for work on the budget, switch you're in your word processor to zip off a memo, switch over to your database to add items to your mailing list, and then just switch back to your spreadsheet — to the exact spot you left off!



Software Carousel Release 4.0 allows you to load up to 12 programs when you begin work and simply switch between them all day long, or load several sessions of the same program, each with a different file, and snap back and fourth to work on several spreadsheets, reports, letters — anything you need — all at once.

Customizable. Compatible. And Highly Economical.

Not everyone will want Software Carousel to work exactly the same. So we've included a number of convenient ways to configure Software Carousel to suit everybody's needs and tastes.

Everything from the hot-key used to switch partitions, to colors on the screen, to the way menus appear.

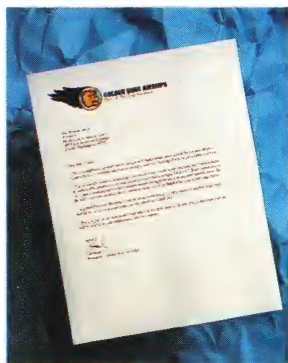
Now With Print 'n' Run.

With this newest feature, Software Carousel becomes something more than an outstanding task switcher.

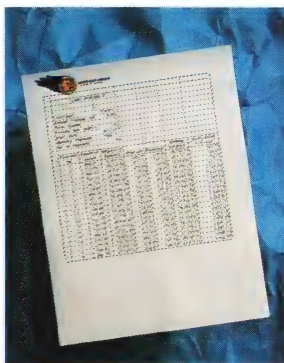
Print 'n' Run is a proprietary print handler designed for the special requirements of the Software Carousel environment.

It works by directing printer output from any application running in a Software Carousel partition into a configurable pool of Software Carousel memory. Print 'n' Run, simultaneously sends the output to the printer as fast as the printer can take it. With Print 'n' Run, printing programs finish in just seconds. And while their printers keep running, users can go on to other tasks in the same application, or even switch to a different partition running another application. No more wasted time waiting for printers. No more lost productivity.

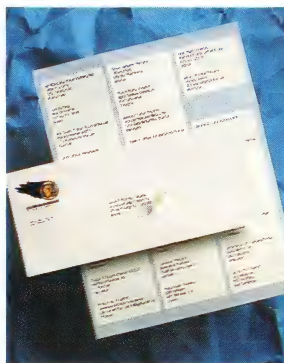
Switch TO YOUR WORD PROCESSOR



Switch TO YOUR SPREADSHEET



Switch TO YOUR DATABASE



Makes the Most of All Your Memory.

- Use all available RAM with every program, no matter how many are loaded. Move from massive spreadsheet, to giant document to huge database in a blink.
- Compatible with Graphics, Networks, Mouse, etc.
- Makes full use of expanded or extended memory boards for lightning fast program swapping.
- Occupies as little as 11K RAM.
- Switch back to the first application, and it's just like you left it. Software Carousel can swap inactive applications to *any* type of RAM, or even use disk space as RAM.

It's Compatible with All Your Software.

If it runs on your IBM PC or compatible, it runs with Software Carousel. No modification or special files needed. No lost features or clumsy windows.

**SOFTLOGIC
SOLUTIONS**

HW 3300 Software Carousel 4.0 5 1/4" ... \$89.95

HW 3305 Software Carousel 4.0 3 1/2" ... \$89.95

IBM PC, XT, AT, PS/2 or compatibles, with 256K.

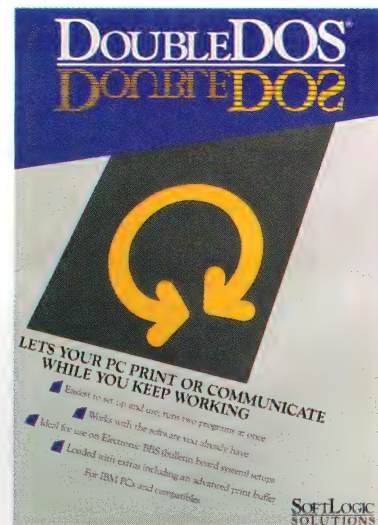
FREE BONUS DoubleDOS!

RUN YOUR PROGRAMS SIMULTANEOUSLY — The True Multi-Tasker For Your PC!

Quick. What happens when you finish a lengthy document in your word processor and then spell check it. Or when you print huge reports, or run data communications? *You wait.*

Why Can't I Do Two Simple Things at Once?

The reason is that the PC is designed to handle one processing task at a time. Sure, it's unproductive — but you're used to it, right? With DoubleDOS, you can actually achieve true multi-tasking. Simply, quickly and without additional hardware or reconfiguring your system. Now you can continue to work while your spell-checker does its job, go on to the next project while printing large reports and finish up a memo while running data communications or "E-mail."



It's Like Having 2 Computers Instead of Just One!

Now your computer can do two things at once:

- DoubleDOS — it's the powerful, multi-tasking system.
- Runs the IBM PC software that you have now.
- Uses as little as 28K RAM.

Now you can stop wasting precious time waiting for your PC to finish one task before you can start another. DoubleDOS is the time-proven multi-tasking program that lets you load and run two different programs at the same time — one program invisibly in the "background," while

you work with the other program in the "foreground."

Double your PC productivity.

Print long reports at the same time you enter data.

- Spell check one document while working on another, or in an entirely different program.
- Conduct long database search and sort routines without tying up your computer.
- Compile programs "in the back-ground" while you edit/debug code.

FREE FEDERAL EXPRESS SHIPPING

To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

Circle 259 on reader service card

TIGER WAREHOUSE YELLOW SHEET

The Latest Software! The Hottest Hardware! If it's not here, call us — we'll find it!

Sorry, but because these prices are so low, shipping is not included.

AUTODESK	
☐ HW109 Autosketch 2.0	\$ 93.23
☐ HW110 Autosketch Animator 1.0	245.30
BORLAND INTERNATIONAL	
☐ HW111 Paradox 3.0	\$456.50
☐ HW112 Quattro Pro	258.50
☐ HW113 Turbo C 2.0	96.80
☐ HW114 Turbo C Professional Pack 1.0	168.08
☐ HW115 Reflex 2.0	166.10
BRODERBUND	
☐ HW118 Memory Mate 3.01 (NCP)	\$ 42.63
☐ HW119 New Print Shop	36.96
☐ HW250 Where In Europe is Carmen San Diego	30.80
☐ HW251 Where In Time is Carmen San Diego	30.80
BUTTON WARE	
☐ HW252 PC File 5.0	\$ 78.65
CENTRAL POINT	
☐ HW120 PC Tools Deluxe 6.0	\$ 87.67
☐ HW122 Copy II PC 5.0	27.00
CH PRODUCTS	
HW500 Flightstick	\$ 50.16
HW501 Mach II	26.95
HW502 Mach III	30.91
HW503 RollerMouse Bus	127.60
HW504 RollerMouse Serial	87.05
CHECKFREE TECHNOLOGIES	
☐ HW123 Checkfree 1.17	\$ 13.50
CURTIS MANUFACTURING	
HW505 Command Center Plus	\$ 81.73
HW506 Diamond	31.57
HW507 Emerald	37.40
HW508 Keyboard Spacesaver	25.30
HW509 Monitor Arm Executive	86.90
HW510 Ruby	53.35
HW511 Safe Strip	17.16
HW512 Static Mat w/10' Ground Cord	25.74
HW513 Tool Kit	21.45
DACEASY	
☐ HW126 DacEasy Payroll 4.0	\$ 58.30
☐ HW127 DacEasy Accounting 4.1	88.00
DATAFORM	
☐ HW128 PROCOMM Plus 1.1	\$ 48.40
DCA/CROSSTALK	
☐ HW124 Crosstalk XVI 3.7	\$108.90
FOX SOFTWARE	
☐ HW130 FoxPro 1.0	\$501.60
GIBSON RESEARCH	
☐ HW132 Spinrite II	\$ 69.85
GREAT AMERICAN SOFTWARE	
☐ HW133 One Write Plus Accounting Sys. 2.0	\$173.80
LOTUS DEVELOPMENT	
☐ HW351 Lotus 1-2-3 Release 2.2	\$335.50
☐ HW352 Lotus 1-2-3 Release 3.0	429.00
☐ HW353 Lotus 1-2-3 Release 2.2 Network Server Edition	436.37
☐ HW354 Lotus 1-2-3 Release 2.2 Network Add'l Node	216.37
☐ HW355 Lotus 1-2-3 Release 3.0 Network Server Edition	509.74
☐ HW356 Lotus 1-2-3 Release 3.0 Network Add'l Node	289.74
☐ HW357 Lotus 1-2-3 Networker, Supports 5 User LAN	1,644.50
☐ HW358 Agenda	264.11
☐ HW359 Lotus Express	106.15
☐ HW360 Freelance Plus 3.01	328.90
☐ HW361 Magellan	149.71
☐ HW362 Manuscript 2.1	328.90
☐ HW363 Metro	60.28
MECA	
☐ HW137 Managing Your Money 6.0	\$121.00
MICROSOFT	
☐ HW142 PC Excel V2.1 (80286/80386)	310.20
☐ HW144 Works 2.0	95.15
☐ HW146 Quick/Pascal 1.0	74.25
☐ HW147 Quick BASIC 4.5	69.58
☐ HW148 QuickC 2.0	69.30
☐ HW149 QuickC 2.01 w/Assembler	158.02
☐ HW150 C Compiler 5.1	346.50
☐ HW256 Flight Simulator 4.0	41.53
☐ HW366 Bookshelf CD-ROM	186.45
MULTISOFT	
☐ HW151 PC-Kwik Power Pak 1.5	\$ 79.86
NANTUCKET SOFTWARE	
☐ HW152 Clipper (Summer '87)	\$449.90
PARADISE	
HW279 VGA Plus w/Tempra	\$157.30
HW280 VGA Plus 16	201.30
PEACHTREE SOFTWARE	
☐ HW153 Peachtree Complete III	\$151.80
PETER NORTON	
☐ HW257 Norton Commander 3.0	\$ 84.15
☐ HW258 Advanced Utilities 4.5	84.15
☐ HW259 The Norton Backup	84.15
PLUS DEVELOPMENT	
HW226 Hardcard II 40 Meg (19 ms)	\$577.50
HW278 Hardcard II 80 Meg (19 ms)	679.80
QUARTERDECK	
☐ HW165 DESQView 2.26	\$ 75.90
☐ HW166 DESQView 386	123.20
☐ HW167 Expanded Memory Manager (QEMM) 386	56.10
SOFTWARE PUBLISHING	
☐ HW170 Professional Write 2.12	\$137.50
☐ HW171 Professional File 2.01	181.50
☐ HW172 PFS:First Publisher 2.1	92.68
☐ HW174 Harvard Graphics 2.13	307.73
SONY	
HW284 Multiscan 1302 13" 800×600	\$605.00
HW285 Multiscan HG CPD-1304 1024×768	678.70
SYMANTEC	
☐ HW177 Q & A Write 1.01	\$134.20
☐ HW178 Grandview 1.0	194.70
☐ HW179 Budget Express 1.0	99.00
☐ HW180 Q & A 3.0	220.00
☐ HW181 Timeline 3.0	448.80
TOSHIBA LAPTOP	
HW290 1200XE 9.54MHz/1MB RAM 3.5" Drive Battery/20MB Drive	\$2849.00
HW291 3100SX 16MHz, 80386, 1MB RAM, 1.44MB Floppy/40MB Hard Drive	4273.50
TRAVELING SOFTWARE	
HW182 Battery Watch 2.0 (3% ONLY)	\$ 29.70
☐ HW183 LapLink III 3.0	92.95
VIDEO 7	
HW242 VEGA VGA	\$140.80
HW243 1024i VGA (includes 512K)	294.80
HW244 VRAM VEGA 512K	493.90
WORDPERFECT	
HW261 DrawPerfect	\$272.25

WINDOWS WAREHOUSE SPECIALS

ADOBE SYSTEMS	
☐ HW516 Illustrator Windows 1.0	\$307.45
☐ HW517 Streamline Windows 1.0	245.30
ASYMETRIX	
☐ HW518 Toolbook 1.0 Windows	\$306.90
ATECH	
☐ HW519 Publisher Powerpack	\$46.75
BRODERBUND	
☐ HW520 Dragnet 1.0 Windows	\$86.35
☐ HW521 Prompt 1.0 Windows	77.55
CAERE	
☐ HW522 Omnipage 386 2.1 Windows	\$625.90
COMPUTER ASSOCIATES/CRICKET	
☐ HW523 Cricket Graph Windows	CALL
COREL SYSTEMS	
☐ HW255 CorelDRAW! 1.2	\$346.50
DCA/CROSSTALK	
☐ HW125 Crosstalk for Windows	\$126.23
FRANKLIN	
☐ HW524 Language Master Windows	CALL
hDC COMPUTER CORP.	
☐ HW525 First Apps	\$ 55.00
☐ HW526 Windows Express 3.0	\$ 55.00
IBM	
☐ HW527 Current	\$232.93
INFORMIX	
☐ HW528 Wingz for Windows	\$434.23
MICROGRAFX	
☐ HW529 Designer 3.01	\$494.73
☐ HW530 Draw Plus	281.33
☐ HW531 X-Port	281.33
MICROSOFT	
☐ HW532 Excel 2.0 Windows	\$312.95
☐ HW533 PowerPoint Windows 1.0	312.95
☐ HW534 Project for Windows	439.45
☐ HW140 Word for Windows	312.95
☐ HW246 Windows 3.0	94.60
☐ HW367 Windows Software Development Kit	315.98
PRECISION SOFTWARE	
☐ HW260 Superbase 4 for Windows	\$430.10

WAREHOUSE BLOW-OUT

LIMITED QUANTITIES

HW3600 4View (5.25")	\$ 19.95	HW2520 Pocket-size Dictionary (syn. & spell)	\$ 43.20
HW6550 AboveDisc (Dual)	57.58	HW2525 Pocket-size Dictionary (syn., spell & defs)	66.00
HW6551 Above Lan	240.00	HW1100 PreScript Deluxe (5.25")	232.20
HW5355 Allways v1.2 (3.5")	112.32	HW1220 Print-A-Plot v2.0	210.48
HW5350 Allways v1.2 (5.25")	112.32	HW7500 Quicken 3.0 PC (Dual)	35.00
HW2160 Bookmark PC (5.25")	39.95	HW5300 Sideways (5.25")	40.30
HW8990 Cordless Manager Mouse	84.00	HW1800 Smalltalk/V (Dual)	62.58
HW1420 DAC Easy Light	37.91	HW1810 Smalltalk/V 286 (Dual)	125.80
HW8880 DOS Partner (Dual)	50.22	HW1805 Smalltalk/V PM (Dual)	313.02
HW1270 Duet PC (5.25")	19.95	HW3650 SQZ! MAC	19.95
HW1505 Extend-A-Name (3.5")	37.78	HW3640 SQZ! PLUS PC (5.25")	29.95
HW1905 Generic CADD Level (3.5")	216.83	HW1650 Superbase II (Dual)	167.00
HW3620 Note-It Plus (5.25")	19.95	HW3740 The Brooklyn Bridge	73.00
HW8050 PC Paintbrush IV (5.25")	56.38	HW5560 ViewLink	87.17
HW2480 Personal Organizer w/SideKick	69.74	HW1260 WealthBuilder with Free Quicken (Dual)	143.00
		HW2500 WordFinder PC (5.25")	32.33
		HW2505 WordFinder (3.5")	32.34

KEY

- ☐ **Dual Media Package.** Includes both 5¼" and 3½" disks.
- ☐ **Specify Media.** Please specify 5¼" or 3½" disk.
- ☐ **Manufacturer Availability.** 3½" disk available by request from the vendor.

SHIPPING

- All orders on this page are billed actual shipping charges.
 - Hardware charged actual shipping rates. Call for UPS second day or Federal Express next day rates to your door.
 - International orders call for rates (305) 443-8212.
- Prices subject to change without notice.*

ALL VERSIONS OF THESE PRODUCTS ARE ABSOLUTELY THE LATEST AVAILABLE AS OF PRESS TIME.

FREE FEDERAL EXPRESS SHIPPING

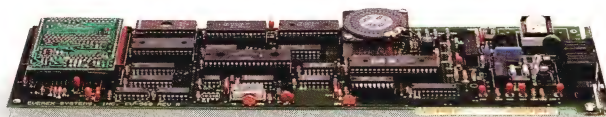
To Order: Call Toll-Free (800) 888-4437

International Orders: (305) 443-8212

Circle 259 on reader service card

OCTOBER 1990 PC WORLD 91

Fax/Modem.
Send/Receive.
View/Print.
Bells/Whistles.
Good/Cheap.
Why/Wait.



It's a fax. It's a modem. It's the EverFax 24/96, and it's the hottest thing in communications since the smoke signal.

Besides sending/receiving and viewing/printing, the bells/whistles let you schedule automatic/unattended transmission of faxes. Our "pop up" feature lets you send/receive/schedule faxes

while in other programs. And our Fax Merge feature even lets you include an automatic cover sheet/letterhead along with your fax.

The premium 2400 bps modem includes MNP 5 data compression/error correction.

And the EverFax 24/96 is compatible with all the major standards—Bell/CCITT/

Hayes AT command set.

For more information, call 1-800-821-0806 for the name of your nearest Everex Reseller.

At a suggested retail price of just \$399, the EverFax 24/96 is an unbeatable combination of price/performance.



Edited by ERIC BENDER

Creating Complete, Unified Presentations

Graphics Packages See New Competition

Windows Entries Challenge Today's DOS Leaders

The front-runner in PC presentation graphics, *Harvard Graphics*, will soon feel the heat from rivals who promise users a new genre of powerful, easy-to-use tools.

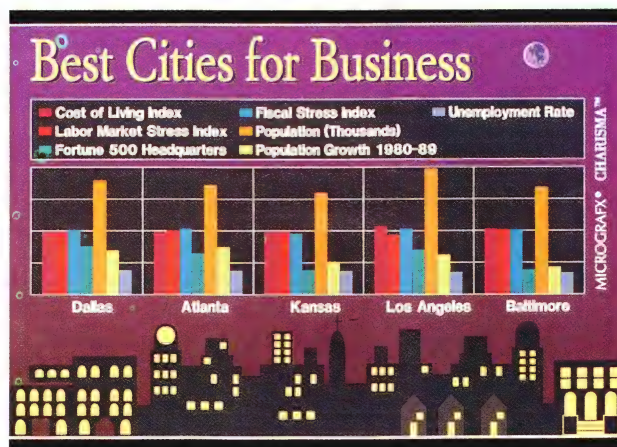
A crop of *Windows 3.0* offerings focuses on creating snazzy, soup-to-nuts presentations. Newcomers like Microsoft's *PowerPoint* and Micrografx's *Charisma* are catching the attention of *Windows* and non-*Windows* users alike. That, many observers say, makes presentation graphics ripe for a corporate takeover by *Windows*.

"To really run graphics you have to have *Windows*," declares Joan-Carol Brigham, an analyst with International Data Corporation (IDC) in Framingham, Massachusetts. She predicts dramatic growth in PC presentation graphics software, with U.S. shipments jumping from 394,000 in 1989 to 1.2 million in 1994 and with *Windows* products playing starring roles.

Windows is a natural for the graphics arena. "It's more than just look and feel," says Paul Grayson, chairman of Micrografx in Richardson, Texas. "It's a more robust environment." Phenomenal *Windows* sales—Dataquest projects more than 2 million copies will ship this year—will accelerate the changeover.

More Than Windows

Faster hardware and the proliferation of laser printers also contribute to heightened interest in graphics. So does



Windows 3 packages like Micrografx's *Charisma* want to elbow aside established graphics leaders like *Harvard Graphics*.

growing user sophistication—once they become proficient in other applications, many managers are eager to make presentation graphics part of their computing arsenal.

Vendors also hope to attract hordes of graphics novices. With their friendlier environments, "*Windows* and [OS/2] Presentation Manager play a key role in that [process]," says Fernand Sarrazat, head of IBM Desktop Software, which is expected to release a *Windows* entry late this year. Desktop publishing leader Aldus is also expected to introduce a *Windows* version of *Persuasion*, its Macintosh presentation offering.

Unlike most current graphics packages, the newcomers are geared toward creating unified presentations. They include hand-holding devices such as templates, preselected color schemes, speaker notes,

and built-in outliners. "The idea is to give users a more advanced starting point—to treat the presentation as a whole, rather than as individual charts and graphics," explains Kim Shah, Lotus's marketing director for graphics products.

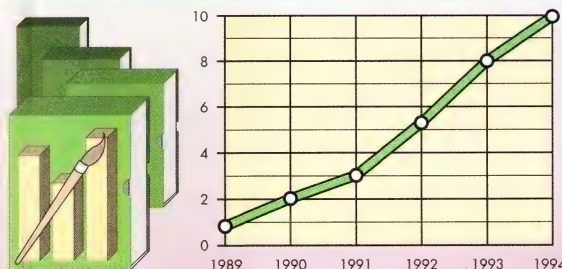
Pushing Harvard's Strengths

Meanwhile, *Harvard Graphics* still enjoys a 40 percent share of an immature market. Software Publishing Corporation (SPC) estimates that only 8 percent of computer users regularly work with a graphics package. "Our number one problem is to expand that market," says Tess Reynolds, director of the company's graphics business unit.

Harvard Graphics 2.3, which shipped this spring, includes support for on-screen slide shows plus an application shell for switching between *Harvard Graphics* and other software. SPC will offer both *Windows* and OS/2 versions, but Reynolds isn't convinced that today's *Windows* packages represent a step up. "The appeal of *Harvard Graphics* has been its clear-cut menu," she says. "First-time users don't have to click on five different menus to figure out what they're trying to do." And despite all the hubbub about *Windows* products, IDC's Brigham predicts that large numbers of *Harvard Graphics* users will remain loyal. —Roberta Furger

Riding Windows' Coattails

Windows shipments in millions (U.S.)



Dataquest projects *Windows* sales will more than double in 1990, and packages like *PowerPoint* and *Persuasion* are likely to go along for the ride. Given the explosive growth of *Windows*, these presentation graphics contenders may have a built-in edge over non-*Windows* stalwarts.

Dot Matrix Printers Regroup Under Fire From Lasers

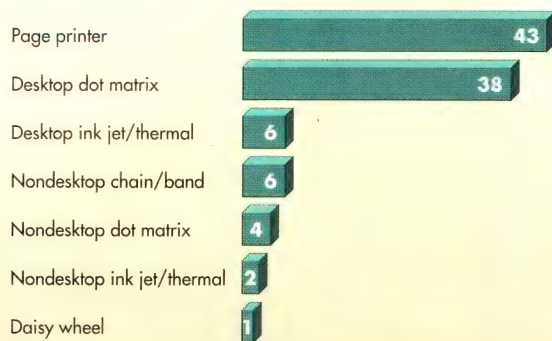
Sales of Impact Printers Now Falling; Vendors Move to Improve Speed, Fonts

Across America, customers are walking into computer stores intending to buy dot matrix printers for their desk-

to \$2.6 billion. At that point, the non-impact printer market (primarily comprising lasers but also thermal and ink jet

Page Printers Outsell Dot Matrix Devices

U.S. sales in percent



Last year, sales of laser and other page printers surpassed those of dot matrix printers in the U.S. market, according to BIS CAP International. Page printers accounted for 43 percent of the \$10.3 billion in total sales, while desktop dot matrix printers garnered a 38 percent share.

tops but walking out with something else—maybe even one of the laser printers that now sell for under \$1000. At the same time, offices are replacing dot matrix devices with more powerful laser devices that can be shared over a network.

Both of these trends are putting enormous pressure on dot matrix printer manufacturers to drop prices and add new features.

After climbing steadily to a high of about \$3.9 billion last year, dot matrix sales will drop for the first time to \$3.79 billion this year, according to BIS CAP International of Norwell, Massachusetts. By 1994 that market will decline 31 percent

devices) should reach \$6.5 billion.

As volumes slowly drop, pricing on dot matrix printers is getting hammered. Additionally, vendors are working to boost speed, build in more memory, and offer more fonts—either built-in or on a cartridge. They also seek to exploit existing advantages, including rugged performance and the ability to print multiple forms at once.

Dueling and Dwindling

Competition is fierce among more than a dozen significant suppliers. At the top, Epson America in Torrance, California, which created the dot matrix market with its MX-80

printer, struggles to fight off rival Panasonic Industrial of Secaucus, New Jersey.

Two years ago, Epson held 20.3 percent of the U.S. dot matrix market compared to Panasonic's 11.5 percent, according to InfoCorp in Santa Clara, California. Last year Panasonic boosted its share of the market to 19.7 percent, while Epson's share dropped to 18.3 percent.

"Panasonic just came out of nowhere," says Ed Pullen, InfoCorp's director of printer market research. The charge was led by Panasonic's 24-pin KX-P1124 printer, which sells on the street for as little as \$250 and accounts for 30 percent of Panasonic's dot matrix sales.

"Panasonic found some wrinkles that Epson missed, such as the mass merchandising market," comments Charlie LeCompte, editor of *Print-out* in Newton, Massachusetts. About 30,000 retail outlets now carry the Panasonic line, says Terry Shorrock, a senior product manager at Panasonic. Epson, however, had an over-distribution problem—selling through so many stores that dealer profits suffered. In the past few years, it has cut back its outlets from 15,000 to 4000, Pullen notes.

Last year, Epson released its first laser printer, the EPL 6000, and has pushed this product aggressively ever since. But it hasn't forgotten its dot matrix line, which includes about 20 models. "That's an indication of our responsiveness and commitment to our niche markets," says general manager Eugene Kunde.

Epson's best-sellers have been the 24-pin LQ-510 and the 9-pin LX-810. Kunde thinks he can lure more customers to Epson's well with the LQ-860, a 24-pin, \$949 color machine.

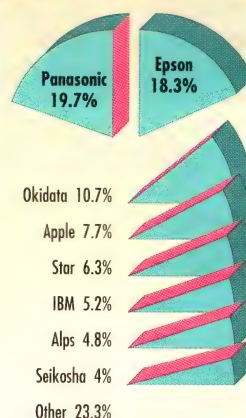
Panasonic will entice cus-

tomers with two-year warranties and may introduce its first color dot matrix printer, Shorrock says. The company also wants to improve font scaling and incorporate easier-to-use panel controls on future models.

Overall, dot matrix devices will remain a fixture in many niches throughout the computing landscape for years to come. Pullen predicts an increasing emphasis on sales to small offices, which will double from 15 percent of total sales today to about 30 percent in 1993.

Panasonic Overtakes Epson In Dot Matrix Printer Derby

U.S. market share by manufacturer



Panasonic's big push into large retail outlets has paid off in leadership of the U.S. dot matrix printer market, according to InfoCorp. Panasonic now sells almost one-fifth of all such devices, edging out perennial front-runner Epson. Almost 5.7 million printers (both 9- and 24-pin) were sold in the U.S. in 1989.

But sometime in the 1990s, the dot matrix party will come to an end. Says Charlie LeCompte, "Companies will get tired of not making money and will drop out of the market."

—Patrick Cole

Printer Sharing Solutions



SL 10 Ports from \$495

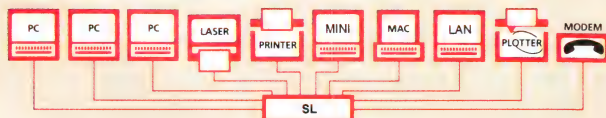
Any Combination of Ten Printers or PCs: All ports can be set as input or output; automatic serial-to-parallel conversion; automatic switching and queuing of jobs

115,200 bps: Our software allows your PC to send data serially several times faster than normal 9,600 bps.

Pop-up Menu via Hotkeys: Keyboard selection of printers and many other control functions

Simple Installation: Just plug in your cables and run the menu-driven installation software

User Upgradable Memory: From 256KB to 4MB buffer



Save by Sharing Resources: The SL enables everyone to share lasers, printers, plotters, and modems. Greater access by more users reduces unproductive idle time and the need to purchase additional expensive peripherals. All users can simultaneously send print data and quickly release their PCs to continue working.

BUFFALO

45 Day Money Back Guarantee

CALL TODAY (800) 345-2356

Fax (503) 585-4505

Buffalo Products, Inc. 2805 19th St. SE, Salem, OR 97302-1520



HWP

5 Ports from \$275

All ports are parallel and user configurable as either 3 inputs to 2 outputs with a pop-up menu, or 4 inputs to 1 output as a buffered auto-switch; memory is user upgradable from 256KB to 4MB buffer

AS-41

5 Ports \$200

4 parallel inputs to 1 parallel output, automatic switch with no buffer; use the AS-31 for up to 3 inputs to 1 output, \$175

CE

2 Ports from \$175

Printer buffer with 1 parallel input to 1 parallel output, from 256KB to 4MB buffer

SPPS

Converter \$100

Combination serial-to-parallel, or parallel-to-serial interface converter in a single unit, no power supply needed, serial transfers to 115,200 bps, DIP switch configurable

RCJ

Toshiba Memory Module

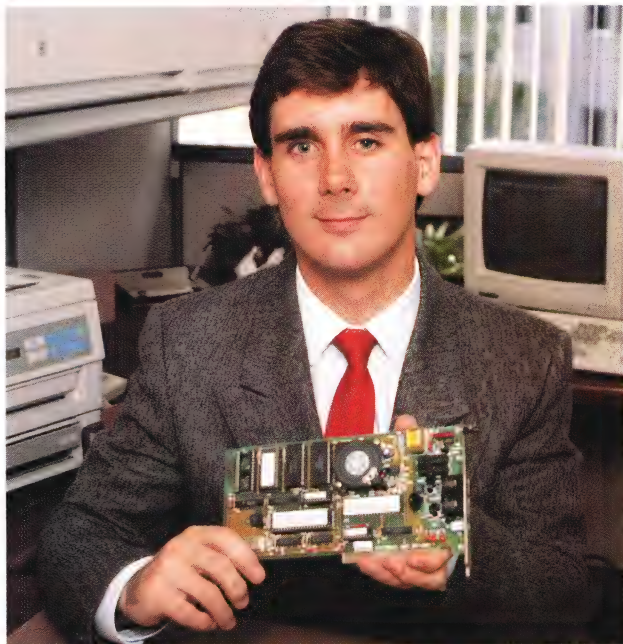
Memory expansion module for the Toshiba T1000SE or T1000XE laptop (notebook) computer, 1MB - \$299, 2MB - \$549

Cables & Adapters

High quality, 24 gauge shielded cables, parallel or serial; modular cable adapters

PC Fax Spreads Slowly Despite Advantages

Progress Overcomes Earlier Technical Handicaps



PC fax plays well on networks, but you still need someone to route incoming faxes, notes Latest Developments' Jeff Gillard.

PC fax boards suffer from the marketing equivalent of a paper jam—they have trouble delivering the message about the customer benefits of PC-based fax.

It's not that users aren't giving them a try. BIS CAP International expects U.S. sales of fax boards to reach 110,000 this year, up 57 percent over last year's. But compared to fax machines, "it's a very small market," says BIS CAP analyst Judy Pirani, who predicts that stand-alone fax machines will outpace boards by about 12 to 1 this year.

Three times as many PCs as fax machines have been installed worldwide, and the technologies are closely tied—one AT&T study shows 80 percent of faxes are originally generated on a computer. With a fax-equipped PC, you can send a file from your disk without leaving your application, or "scattergun" faxes to a group

of people in off-hours when phone tolls are lower. You can view a computer-received fax before printing and produce a copy on plain paper. Also, PC faxes are sharper, since they need not be scanned first.

Progressive Pricing

Fax boards are also cheaper than stand-alone machines. That was true when Gamma-Link of Sunnyvale, California, introduced its first GammaFax for \$1995 in 1985, and it's still so. A low-end GammaFax model now sells for \$495, although other 9600-bps Group III faxes can exceed \$1000. Boards that send at 4800 bps can be had for under \$300, and cheap fax/modem combos are popular. In contrast, the typical office fax machine offers fewer features at around \$1300, and prices rise to more than \$2000 for models that run unattended.

This price gap widens fur-

ther when it comes to network-fax gateways. A fax server XT, with multiple boards, can replace any number of machines and save time for any net user.

"The whole application of PCs to fax is still down the road," says Richard Gough, communications business unit manager at Intel's Personal Computer Enhancement Operation in Hillsboro, Oregon. "But technology is definitely on the side of the fax board."

So What's the Hang-Up?

Fax machines remain much easier to use, and they can handle anything on paper (you need a scanner to do the same with a fax board). So although PC fax can do anything stand-alone fax can do, "fax boards augment fax machines, they don't replace them," says Bert Ranking, group product manager for The Complete PC in San Jose.

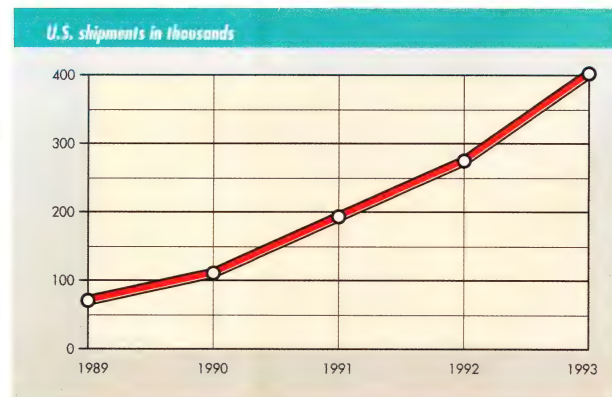
Some technical barriers have fallen. The better fax boards now handle transmissions smoothly in the background. And with a device that detects fax, modem, and voice traffic and switches between them accordingly, you don't

need a dedicated phone line.

While vendors have emphasized single-user installations, fax boards will naturally move to networks. The biggest problem with a net is receiving and routing messages, says Bill Butcher, vice president of Hayes Microcomputer in Norcross, Georgia. "You need a fax manager to pick up the faxes and determine who they're for, which is a manual operation," agrees Jeff Gillard, systems integrator at Latest Developments of Toronto.

One problem that has plagued fax boards is the lack of standards—as a rule of thumb, no one's board works with anyone else's software. That problem is easing somewhat with the emergence of the Intel/DCA Communicating Applications Specification, which lets you send faxes directly from applications. More than 60 packages now support CAS, ranging from headliners like *PC Tools Deluxe* to *FAC-Sys* from Optus Software of Somerset, New Jersey, a *Windows*-based net product that uses text-recognition scanning to help route incoming faxes. Rival hardware vendors are reluctant to back CAS, but they are slowly yielding to pressure from software developers.—Mark Henricks

Fax Boards Plug Ahead



U.S. shipments of PC facsimile boards show steady growth, according to BIS CAP International. But stand-alone fax machines sell in far greater numbers—1.6 million this year, for example.



A Complete 386/33 MHz Cache System For Under \$2000.

Finally, you can afford to put the fastest 386 computer at your fingertips to enjoy the performance that once only belonged to the ranks of File Servers, Multi-user Host Computers and CAD/CAM/CAE Workstations.

Other manufacturers with their simple-minded direct-mapped cache architectures were obsessed with churning out the best benchmark numbers. We, however, were not convinced DOS and Power Meter 1.3 is any example of a typical real life application (registering at 8.003 MIPS, we are not too shabby either). With Two-Way Set Associative Cache capability, our 386 is also more attuned to run the emerging multi-tasking operating systems like OS/2® and UNIX™, where modular code sizes (of less than 32K) and frequent code-switching are the norms. Worrying about compatibility? Both IBM® and COMPAQ® endorsed the same INTEL® 82385 Cache Controller. Furthermore, we

enhanced it with page-mode and interleaved memory in the event of a cache miss. It is the closest to a true 0-wait-state implementation on the market.

Nobody does it better. Nobody!

Configuration Chart

Options	Mono	VGA	S-VGA
80MB/28ms MFM	\$2,640	\$3,135	\$3,335
150MB/23ms ESDI	\$3,090	\$3,585	\$3,785

4MB RAM Upgrade	Add \$400
64K Cache Upgrade	Add \$150
Vertical Case	Add \$200
Vertical Mini Case	Add \$100

CALL FOR ADDITIONAL CONFIGURATIONS

25MHz 486 w/64KB Cache	\$4,495*
25MHz 386 w/32KB Cache	\$1,895*
20MHz 386 Ø-Wait non-Cache	\$1,345*
16MHz 386SX Ø-Wait	\$ 895*
12MHz 286 Ø-Wait	\$ 745*

MIS 386/33 MHz

- INTEL® 82385-33 Cache Controller
- 32KB SRAM Cache
- 1MB RAM (Up to 4MB on Board)
- Expandable to 16MB of 32-Bit RAM
- 1.2MB 5.25" Floppy Drive
- 1:1 Interleave HDD/FDD Controller
- 12" Monochrome Monitor & MGP Card
- 101-Key Keyboard
- 2 Serial, 1 Parallel & 1 Game Port
- 80387 & Weitek Co-processor Support
- Regular Size AT Case & Power Supply
- 1 Year Limited Warranty

\$1,995

30-DAY
MONEY BACK
GUARANTEE!

MIS Computer Systems

P.O. Box 70897 Sunnyvale, CA 94086-0897

Order Now
1-800-733-9188



Office Hours: M-F 9:00 am-6:00 pm (Pacific Time)

Circle 171 on reader service card

* Basic Monochrome Systems with Single Floppy

2% surcharge on credit card purchases and are not submitted until shipping. CA residents add appropriate sales tax. Prices and terms are subject to change without notice. 30 days money back does not include monitor, keyboard and shipping charge. Personal and company checks require 2 weeks clearance. All names mentioned are registered trademarks of their respective companies. On-site service available.

dBASE IV 1.1 Ships—Finally

Will Users Embrace New Version?

Nearly two years after the initial release of a flawed *dBASE IV*, Ashton-Tate is shipping the fix. But with version 1.1 of the leading data base manager finally on the scene, will customers simply forgive and forget? Or will the sales momentum generated by products like Fox Software's *Foxbase* and Borland's *Paradox* overwhelm the data base kingpin? Most important, should users remain committed to the *dBASE* language?

The uproar in the data base management arena is compounded by differing views of *dBASE IV 1.0*: Users are far less critical than developers, many of whom trash it with gusto. The only thing the two groups agree upon is that Ashton-Tate almost blew it.

A Ride in Red Ink

Originally shipped in October 1988, version 1.0 was fat, slow, and bug-ridden. Ed Esber, Ashton-Tate's then-CEO, promised a rigorous reworking and a quick release of a standard edition, to be followed by a version tailored for

the *SQL Server* being built by Ashton-Tate and Microsoft. Esber also showed developers a compiler that he claimed outperformed Nantucket's *Clipper 4.0*.

But version 1.1 development languished—and with it, work on both the compiler and the *SQL* edition. As a result, Ashton-Tate lost exclusive retail marketing rights to *SQL Server*, the linchpin of its grand corporate connectivity scheme.

The delay has meant five straight quarters of losses for the Torrance, California, firm and has led to the resignation of nearly every executive associated with *dBASE*—including Esber himself. As version 1.1 neared its release date, purchases of other *dBASE* versions slowed, adding red ink. In the second quarter ended June 30, Ashton-Tate lost \$12.6 million on revenues of \$48.1 million—a steep slide from the first quarter, when it lost just \$979,000 on \$57 million of revenues. (*dBASE* products account for about 67 percent of total sales.)

A Stronger Standard Setter

Enhancements in *dBASE IV 1.1*

- Conventional-memory requirement: 450K as opposed to 516K
- Faster performance of overlay-dependent applications, particularly those using Control Center or menus and windows
- Users can balance need for speed against need for memory
- Lower memory demands on networks
- Simplified installation routine and easier modification of existing setup
- Disk caching option lets overlays be stored in expanded or extended memory
- Better record indexing for faster performance
- Expanded use of user-defined functions enables you to perform more actions with fewer keystrokes
- Improved implementation of Structured Query Language commands

Ashton-Tate not only addressed reliability and memory-use issues in the new release of *dBASE IV*, it added some significant new features.



While his company's confidence in Ashton-Tate was shaken, the new *dBASE* looks solid, says 3M Corporation's Paul von Fange.

Analysts expect the bottom line to get worse before it gets better. Nancy McSharry of International Data Corporation in San Francisco figures that revenues could dip 20 percent this year, in part because copies of 1.1 will be given free on request to buyers of 1.0.

Yet IDC's numbers show that Ashton-Tate's various *dBASE* versions still account for 40 percent of relational data base products sold and 50 percent of the installed base.

While its share has slid steadily, *dBASE* remains the relational data base standard and the odds-on favorite to stay so, says Bill Higgs of InfoCorp. In his view, competitors have profited as much as they can from Ashton-Tate's stumbling. With 1.1 shipping, the company's fate remains in its own hands, says Higgs: "They're the league leader, and it's their pennant to lose."

Is 1.1 Good Enough?

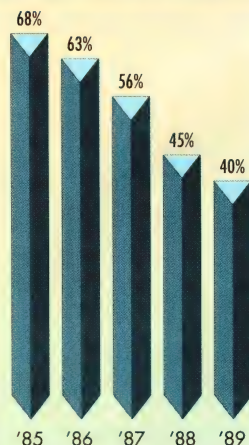
The future of Ashton-Tate and to a certain extent the vibrancy of the *dBASE* standard will depend upon the quality of version 1.1. This is more than a bug fix—Ashton-Tate rewrote the memory architecture (so that the software works in as

little as 450K of available memory) and added performance-tuning options and language extensions. The result is much smaller, faster, and more reliable, the vendor claims. So far, users agree.

Release 1.1 looks solid, says (see *dBASE IV*, p. 100)

dBASE Loses Share in Data Base Arena

dBASE's share of data base market



Despite a continuous loss of its share of relational data base unit sales to products like *Foxbase* and *Paradox*, the *dBASE* family continues to hold a commanding share of the market.

A Quicker Solution for Home and Office Finance Management.

DacEasy Light® Checkbook Accounting is One Program Perfect for Two Places.

DacEasy, the worldwide leader of accounting software, gives you complete accounting for the non-accountant with DacEasy Light. Install in minutes, and before you know it, you're in complete control of your home and office finances.

At Home

Light Checkbook Accounting allows you to quickly balance your checkbook, manage credit cards and budget your cash flow for the year. You can create up-to-the-minute personal financial statements to take the guesswork out of purchasing decisions. Plus, you are always working with familiar on-screen formats such as checks and credit card slips.

Enter checks manually or write checks on your computer and print them out. The availability of pre-printed checks makes paying your bills a breeze. And you can maintain a 12 month budget that instantly shows you how your actual activity compares to your budget.

Using DacEasy Light at home makes managing your personal finances simple and painless.

DacEasy

Light
CHECKBOOK
ACCOUNTING

Quick and Easy
Checkbook Accounting
for Small Business
and/or Home Use.

- Easy Installation and Start-Up
- Manages Checking Accounts, Cash, and Credit Cards
- Prints Invoices, Checks, Statements, and Mailing Labels
- Creates Informative Reports
- Includes Handy Pop-Up Calculator

At the Office

Light Checkbook Accounting quickly tracks customers, vendors, sales and expenses. You can even make 12 month forecasts for your business. In addition, you can print your balance sheets and income statements, charts of accounts, and produce spreadsheet reports for budget analysis. DacEasy Light also helps to make tax time easy by keeping a record of needed tax information when you are ready to file your return.

As your business grows, you can upgrade your software so that it grows with you. DacEasy also offers a complete array of forms, software, and support services too.

Simplify your business finances with DacEasy Light and you'll wonder how you ever survived without it.

When it comes to quick management of your finances at home or the office, DacEasy Light Checkbook Accounting makes it simple. IBM and new Macintosh version 2.0 available.

Contact your Local Dealer, or Call:

1-800-877-8088

In Canada Call: 416-940-3314

Insilio

Minimum Hardware Requirements: IBM PC or 100% compatibles, 1 disk drive, MS-DOS or PC DOS 2.0 or later, 80 column printer able to print 132 columns in compressed mode, 256K memory. DacEasy Light Checkbook Accounting for the Macintosh, Version 2.0 requires a Macintosh Plus or higher. Trademarks: IBM, PC-DOS, MS-DOS. Apple and Macintosh are registered trademarks of Apple Computer, Inc. DacEasy is a trademark of DacEasy, Inc.. Copyright © 1990, DacEasy, Inc. All rights reserved.

Circle 94 on reader service card

- ☐ I would like to order DacEasy Light for \$69.95.*
☐ Please send me information on DacEasy Light.
☐ Please send me a DacEasy Light Demo Disk.

☐ IBM ☐ Mac
☐ 3 1/2" ☐ 5 1/4" (IBM only)

Phone: _____ Ext.: _____

Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Payment: ☐ Check ☐ Money Order ☐ AMEX ☐ MC ☐ Visa

Acct. #: _____ Expires: _____

Signature: _____

*Add \$7.50 for shipping and handling.

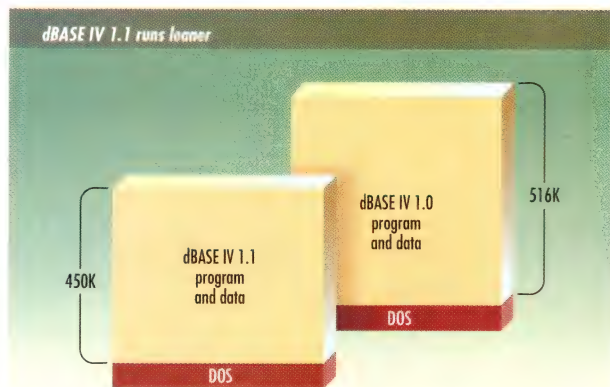
Texas residents add sales tax.



DacEasy, Inc. 17950 Preston Road • Suite 800 • Dallas, Texas 75252

Media Code: 203

New Version Adds Features, Reduces Memory Overhead



According to Ashton-Tate, dBASE IV 1.1 uses 450K of memory to hold the dBASE program, a typical dBASE user application, and an average amount of application data. That's a big drop from the 516K that dBASE IV 1.0 requires. The dBASE IV 1.1 program itself occupies a slim 264K—much closer to the 220K that dBASE III Plus occupies and far less than the 398K that dBASE IV 1.0 needs.

dBASE IV

(continued from p. 98)

beta tester Paul von Fange, a systems analyst for 3M Corporation in St. Paul who supports about 1000 dBASE users. About 200 users switched to 1.0 when it came out, and "there haven't been all that many complaints," notes von Fange. Others stayed with dBASE III Plus partly from inertia, partly from budget considerations, but mostly because of adverse press about dBASE IV's bugs.

Tony Lima, dBASE Language Advisory Board member and president of Pacific Systems Design Workshop in San Francisco, observes that his corporate clients are generally far more tolerant than developers. Corporations "tend not to be very vocal, but that's where Ashton-Tate makes its bucks," Lima says. "Right now, there are lots of purchase orders for dBASE IV that everyone just left on the shelves, waiting for 1.1."

Developers Departing?

If their clients are so unconcerned, why do dBASE lan-

guage developers pan the product so consistently? Some long-time dBASE devotees now ask clients who insist that they write in dBASE to release them from their warranties; they've come to prefer other development tools. But often this is because of Ashton-Tate's inability to keep its product current or provide adequate developer support, explains Les Squires, president of Word Jenny in Wellesley, Massachusetts.

On the other hand, most developers quickly point out that each leading data base product has its own strengths, that purchases of software tools are not mutually exclusive, and that corporate customers increasingly use whatever is appropriate. "When someone asks me 'Should I buy Clipper or dBASE,' I tell them: 'Buy both; you need both,'" Squires remarks. "Why buy only a Phillips screwdriver or regular screwdriver? You need several tools."

Von Fange says that his end users face less rigorous needs than developers and weren't put off by version 1.0's admitted slowness and large appetite for conventional memory.

He expects another couple of hundred users to move to 1.1. But he adds that confidence in Ashton-Tate has been shaken.

Wall Street is even less favorably disposed toward the company, reports analyst Bahar Gidwani of Gidwani & Co. in New York City, although he doesn't share that view. Many analysts expect Ashton-Tate to be acquired or to slowly devolve into a second-rate power. But the company's stock, which declined by a quarter of its value to 9¢ this year, jumped a point and a half on news of 1.1's shipment.

Even should Ashton-Tate fall, the dBASE language will not only survive but prosper, maintains Gidwani. Most analysts and developers agree.

Altered Vendor Vision

Bill Lyons, Ashton-Tate's new president and COO, isn't leaving it to chance. He has brought in veteran IBM development executive David Proctor to run the data base division. Lyons also has shifted development staff over to technical support to closely monitor and quash any bugs that appear in version 1.1. He

pledges a steady stream of maintenance releases. Moreover, Lyons promises that the SQL Server edition will enter beta testing soon, followed within a reasonable time by the compiler and Macintosh and Windows versions.

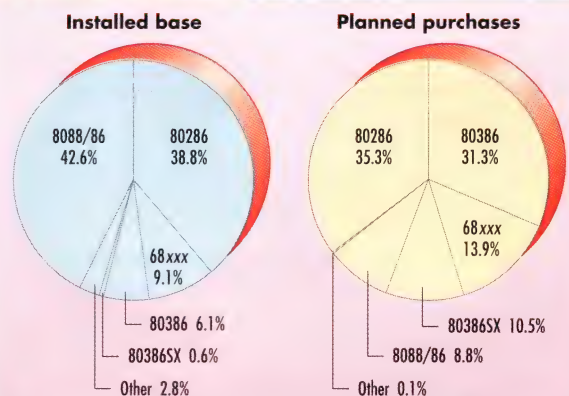
Ashton-Tate will become profitable sooner than people think, says Lyons, because version 1.1 will jump-start the product category. Contrary to past corporate philosophy that begrudged dBASE-compatible packages' every sale, "this isn't a zero-sum game," he adds. "A reliable, stable product will reinvigorate the category and give people confidence in dBASE, and all will grow. We just expect to grow faster than others."

Longtime observers tend to agree with him, pointing to the huge installed base of dBASE applications and training—and the lack of a competitor strong enough to overcome this lead. Concludes IDC's McSharry, "I think they can ride it out." —Mike Hogan

Patrick Cole is a business writer based in Los Angeles.

A Slow Shift Up in PC Power

Systems grouped by CPU family



In Computer Intelligence surveys of thousands of U.S. and Canadian businesses, 80286- and 8088/86-based PCs make up 81.4 percent of the installed base of PCs. In the year beginning May 1990, 41.8 percent of planned purchases will be 80386 or 80386SX machines. But despite industry hubbub, purchase plans for 80486-based PCs were nil.

TWO-FISTED MANAGEMENT

TWO-FISTED MANAGEMENT

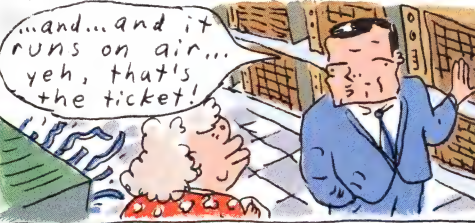


HE COULD SELL ANYTHING TO ANYONE AT ANY PRICE.

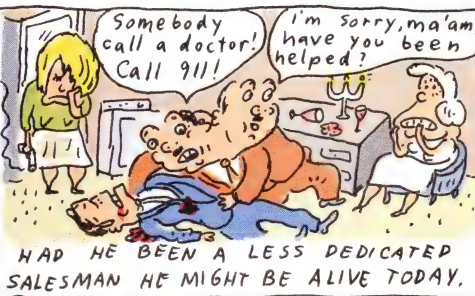
"Sir, if you have to ask, 'Do I need one?' then you don't have one and so, yes, you need one."



HE HAD EVERYTHING A SALESMAN COULD WANT: A HANDSOME PHYSIQUE, A FULL HEAD OF HAIR, AND A KNACK FOR THE SALES ANGLE.



HIS REPUTATION WAS LEGEND; HIS CHARISMA WAS HYPNOTIC. HIS GUIDING PRINCIPLE -- ESTABLISH A RELATIONSHIP WITH YOUR CLIENT.



HAD HE BEEN A LESS DEDICATED SALESMAN HE MIGHT BE ALIVE TODAY.

TRUE SALES TALE

TED ENGLE WAS THE BEST OF THE BEST -- THE STANDARD BY WHICH ALL OTHER SALESMEN WOULD BE MEASURED.



SOME SAY HE WAS BORN WITH THE TALENT. MORE LIKELY HE ENROLLED IN A MAIL-ORDER COURSE AFTER ALL ATTEMPTS TO FIND DECENT, RESPECTABLE WORK FAILED.



HE WAS THE ENVY OF THE ENTIRE SALES STAFF.



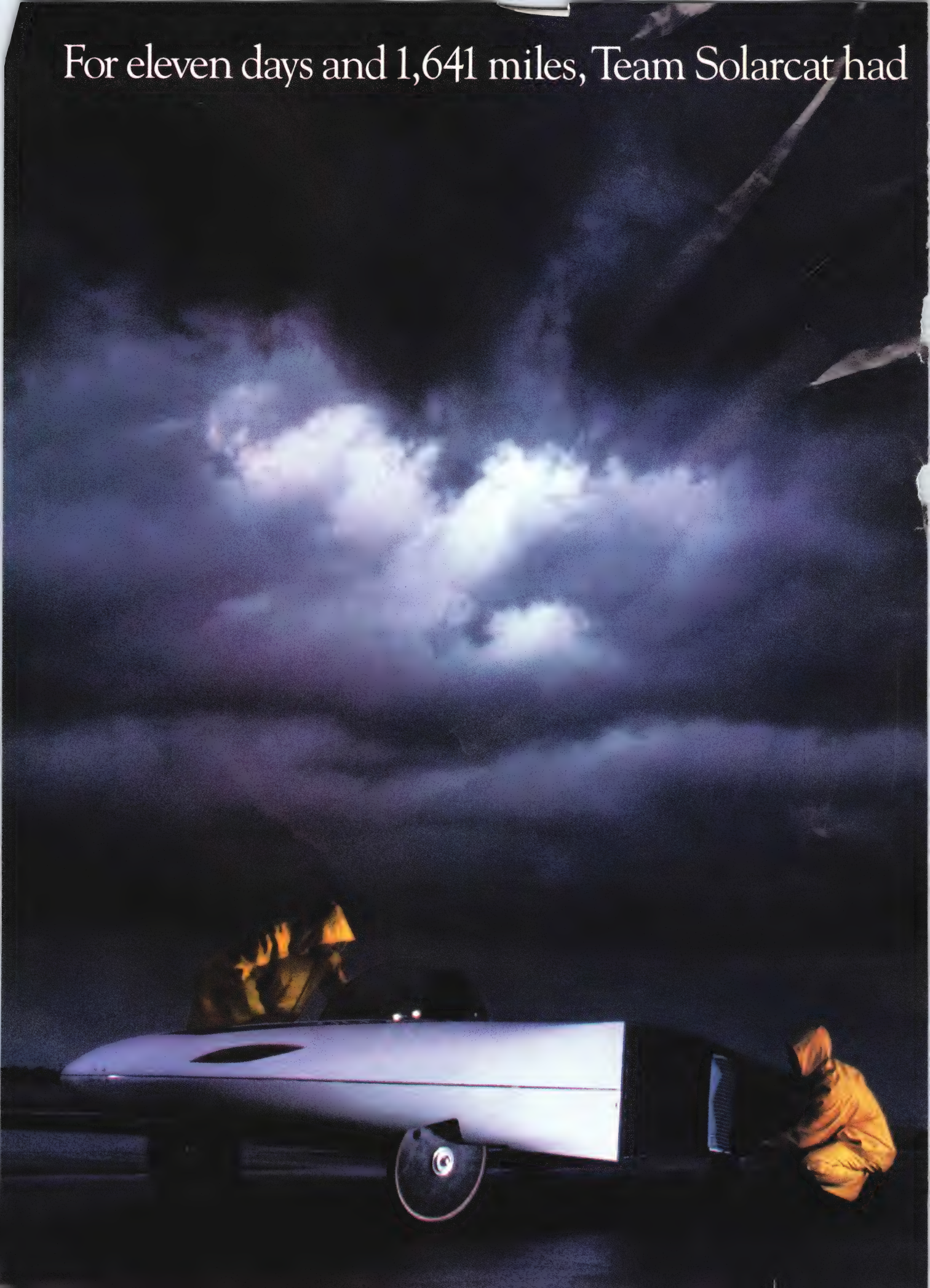
JEALOUSIES SURFACED. FINALLY, ONE NIGHT, A DISTRAUGHT CUSTOMER BURST IN.



BUT SOMETIMES A MAN'S GOTTA STAND BY HIS CONVICTIONS.



For eleven days and 1,641 miles, Team Solarcat had



to rely on more than the sun.

Looks like another beautiful day for Sony floppy disks.

For a certain solar-powered vehicle, they shine even when the sun doesn't.

After all, Sony floppies are made for critical missions.

Recently a team of engineering students from Villanova raced their "Solarcat" from Florida to Michigan in Sunrayce USA.

The competition: Physics. The elements. And thirty-one other solar-powered cars.

Moreover, the team had to analyze a steady stream of computer information: Energy absorption. Battery depletion. Even the elevation of hills.

Not one byte could be lost.

That's why, after sweating over their computer screens for this very critical event, Team Solarcat trusts their data only to Sony's critically acclaimed 3.5" disks.

The floppies that always earn their place in the sun.



SONY

Circle 269 on reader service card



Now you can change programs on your computer just as easily.

"Click," spreadsheet.
"Click," word processor.
"Click," database.

Imagine. Now you can change from one software program to another just like changing channels on your television. With Software Carousel,* it's that easy.

No more saving files, exiting programs, loading new programs and retrieving new files, every time you need to change applications.

Simply load your programs in the morning (it handles up to twelve at a time). Then "click" from one to another all day long.

Over to word processing for a quick memo. Into your spreadsheet for budget work. Off to your database for a mailing list update. Return to your word processor, and it's ready to go back to work, right where you left off.

Or load several sessions of the same program, each with a different file, pop back and forth, and work on several spreadsheets, documents, or anything else, all at once.

Why didn't someone do this before?

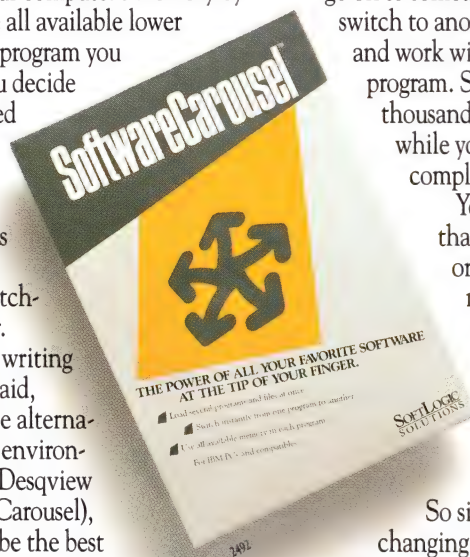
Actually, a lot of people tried. But what they ended with were a bunch of fancy software "environments" that eat up memory, change the way you work, and boggle the mind with complexity.

Plus, a lot of them make you buy new "compatible" software applications. Some even make you buy a bigger computer.

Software Carousel, on the other hand, works with the programs you already own. So you can go on using 1-2-3, WordPerfect, dBASE, SideKick, any program that runs on the computer you use right now. In an absolute minimum of memory. Without changing anything about the way your software runs.

Best of all, Software Carousel makes the most of your computer's memory by letting you use all available lower RAM in each program you use. And if you decide to add extended or expanded memory, Software Carousel works with that too, and makes switching even faster.

Garry Ray, writing for PC Week said, "Of these three alternative operating environments (OS/2, Desqview and Software Carousel), Carousel may be the best choice of the day."



New
Release
4.0

**NOW WITH
PRINT'N'RUN**

You'll never wait for your printer again!

Now when your printer can't keep up, Carousel directs printer output into its storage pool. Your printing programs finish in just seconds, by printing to the pool (memory).

While your printer keeps running, you go on to something else. You can even switch to another Carousel partition and work with a completely different program. Software Carousel can store thousands of lines of printer output while your program zooms to completion.

You'll also find new options that free up even more memory for your programs. A new customization menu where you can tailor all of Software Carousel's features the way you want. Plus full support for graphics programs, as well as networks.

So sit back, relax, and start changing programs the easy way. With Software Carousel.

**Software
Carousel \$89⁹⁵**

SoftLogic Solutions, Inc.
One Perimeter Road, Manchester, NH 03103

Available at software dealers everywhere.
Or, order direct by calling toll-free.

Call 800-272-9900
(603-627-9900 in NH)

**SOFTLOGIC
SOLUTIONS**

Software Carousel is a registered trademark of SoftLogic Solutions. Other brand names are trademarks or registered trademarks of their respective owners.
© 1989 SoftLogic Solutions

Circle 23 on reader service card

PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

Paradox Muscles Up

Borland's three-pronged attack places Paradox 3.5 firmly in the league of the corporate heavyweights.

Name	Zip_code	Address	City	State
George Bartelshay	4JT	518 Pine St	Manchester	
Sandy Sandouberg		110 Rue Christopher	Paris	
Lorna Cameron	00708	200 Junipero Serra B	Los Angeles	C
Larry McGill		1344 Summit Rd	Bonn	
Roy Kilan		214 Central Av	Madrid	
Russell Bohm	21306	2102 Coronet Blvd	Baltimore	M
Michael Donaldson	03981	4335 Irving	Boston	M
Sheldon Franklinberg	43288	415 Renillard Dr	Hillsborough	C
Joe Smith	10036	481 Century Dr	New York	N
Raymond Sandberg	W1A4Y	1055 46th Av	London	
George Durbin	35291	625 30th Av	San Mateo	C
Michael Henderson	25254	227 Quintara St	San Francisco	C
Dolores Forsh	12219	1548 Center Rd #28	Brooklyn	N
David OMalley	48201	1521 Lago #24	San Mateo	C
Barbara Sands	54671	177 Yerba Buena Av	St. Louis	M
George King	35291	578 University Av	Palo Alto	C

Aside from performance improvements, the big addition to Paradox 3.5 is its built-in hooks to the optional Paradox SQL Link. When SQL Link is hooked up, a new SQL menu group appears.

Eric Brown

From its inception, *Paradox* has been sold as an easy-to-use, even stylish application for managers rather than data base gurus. But once these managers learned query by example (QBE) and explored programming in *Paradox's* PAL, they wanted more.

As PAL applications became more complex, users found they needed better performance. As *Paradox* took hold in corporations fed up with waiting for Ashton-Tate, there came a growing need for connectivity. And as dBASE developers moved over to PAL,

there was a greater demand for development power.

Borland has addressed all these needs with new products that give *Paradox* more muscle for its growing role as a corporate data manager. To boost speed, Borland gives us *Paradox 3.5*. For connectivity, you can call on *Paradox SQL Link*, a \$495 add-on that lets *Paradox 3.5* users access data on the top three SQL data base servers. And for development muscle, Borland is upgrading *Paradox Engine*, its library of C calls for manipulating *Paradox* data.

Like its rival *DataEase*, *Paradox* is now in a better po-

sition to lure disgruntled dBASE users. Although dBASE IV 1.1 has finally shipped, the dBASE SQL connection is not expected until 1991. Meanwhile, Borland and DataEase offer SQL front ends today. (See *Product Outlook* for a look at *DataEase SQL* and "Four SQL Data Bases: Mainframe Muscle in a PC Package" for more on SQL data base servers and front ends.)

Paradox 3.5: VROOMMing Ahead

The latest version of *Paradox* looks like 3.0, but it's quicker. The main boost comes from

VROOMM (virtual runtime object-oriented memory management). VROOMM destroys the barrier between the memory space that programs use for overlays and the space above it that's allocated to data. VROOMM uses small, modular overlays and dynamically reallocates as needed the amount of RAM assigned to data and overlays. If you need more room for data and applications, for example, the overlay area decreases. Also, VROOMM frees up an average of 50K of conventional memory—good news for network users.

The result is top speed, especially during indexing and sorting. On a 286 PC with 1MB of RAM, Borland claims sorts are 50 percent faster than with *Paradox 3.0*. In addition, using a built-in DOS extender called TurboDrive, users of 286, 386, and 486 machines can tap up to 16MB of memory, further boosting speed. Thanks to TurboDrive, the 80386-specific *Paradox 386* is being phased out.

Aside from improved performance, there are only a few enhancements worth noting. PAL programmers can now place variables and functions directly in forms and reports as calculated fields. Also, there are links for up to nine tables (rather than five) in multitable forms. And Borland snuck the price up from \$725 to \$795.

Paradox SQL Link: Simultaneous Access

SQL Link is an add-on to *Paradox 3.5* that lets users access SQL data base servers from IBM, Oracle, and Microsoft. You load a single module that accesses all three server types—and all at once if you so desire. For example, you

can copy a table from *Oracle Server* to *SQL Server* with a brief stop in the intermediary *SQL Link*. Thus *SQL Link* can act as a conversion program between SQL dialects.

To get started, you set up a configuration file that auto-

matically opens access to any of the attached servers. *SQL Link* then makes replicas of all the tables to which you have access and copies them to *Paradox 3.5's* traditional Table area. The replicas contain the field and structure of the remote tables, minus the data, speeding up queries involving remote tables.

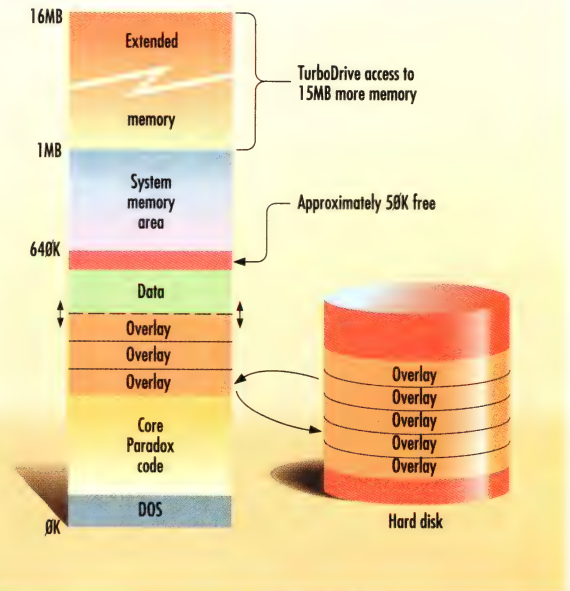
Because *Paradox* and *SQL* are both set oriented (rather than record oriented like *dBASE*), the QBE translations to *SQL* are straightforward. *Paradox SQL Link* demystifies *SQL* data by making a *SQL* table appear like any other. As you highlight each table in *Paradox 3.5*, a colored flag identifies its type. You can even perform *Paradox* menu operations, such as retrieving, updating, inserting, and deleting via QBE, on remote *SQL* tables. *Paradox 3.5* provides special menu options for remote table operations, but they remain hidden unless *Paradox* senses the presence of *SQL Link*.

There are some limits to remote operations, however—you can't call on QBE extensions, and you can't use set-level queries, such as "Give me everybody who bought none of our 1989 products." Also, the only way to join two disparate tables is to combine them into a local *Paradox* table.

SQL Link supports each server's security tricks and dialect enhancements, including *SQL Server's* performance-boosting stored procedures. Additionally, *SQL Link* provides its own security code, which you can use together with or in place of the servers'.

You can embed *SQL* in *PAL* programs (a handful of *SQL*-specific commands and functions have been added), but it's doubtful that many *PAL* programmers will be writing critical transaction processing applications. Rather, *SQL Link* is designed primarily for

VROOMM: Speed, More Free RAM for Borland Programs



Like Quattro Pro, *Paradox 3.5* uses VROOMM memory management to reduce the size of program overlays and swap them to disk when more room is needed for data and other memory-resident applications. No longer is there a firm barrier between the section of memory devoted to data and that assigned to overlays. The result is greater speed and an average of 50K extra conventional memory—just enough RAM to squeeze in a favorite TSR or a network driver.

managers who need occasional access to corporate data via QBE. Because PC-based *SQL* servers have barely made a dent in the marketplace, Borland expects that many initial customers will be using *SQL Link* to access UNIX-based *Oracle* servers. *SQL Link* is written for any *Oracle* server, but it's up to the user to iron out the remote links via modem or IRMA board.

Paradox Engine 2.0: Windows and OOP

Meanwhile, Borland is aggressively pushing *Paradox Engine*, a development library that lets C programmers write applications that tap *Paradox* data. The idea is to keep *PAL* simple for the casual corporate programmer while providing a powerful development environment for professionals who work in C.

With version 2.0, Borland is hitching its wagon to archival Microsoft's *Windows 3.0*. By adding support for *Windows* Dynamic Link Libraries, *Paradox Engine* will let developers write *Windows* applications that call upon *Paradox* data. (All this is but a prelude to a true *Windows* version of *Paradox*, due in 1991.) Furthermore, version 2.0 adds an object-oriented programming layer that will let developers experiment until a true OOP version arrives in a year or so.

Overall, Borland's enhancements boost *Paradox's* legitimacy as a powerhouse corporate data manager. *Paradox* may become the corporate data base of the nineties while old favorites stumble in the starting gates. ●

Eric Brown is the senior associate editor for PC World.

HARRY ALING

SNAPSHOT

Paradox 3.5 Paradox SQL Link 1.0 Paradox Engine 2.0

This trio of upgrades and introductions strengthens *Paradox* for the tough demands of the corporate world, adding speed, connectivity, and development support.

PARADOX 3.5

- Faster performance with VROOMM
- Support for up to 16MB of memory
- Calculated fields in reports

PARADOX SQL LINK 1.0

- Front end links to IBM, Oracle, Microsoft servers
- Automatic configuration
- Simultaneous multiple server access

PARADOX ENGINE 2.0

- Developer support for Windows 3.0
- Object-oriented programming layer

AVAILABILITY

September for *Paradox 3.5* and *SQL Link 1.0*; fall 1990 for *Paradox Engine 2.0*

PRICING

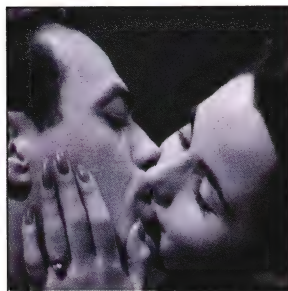
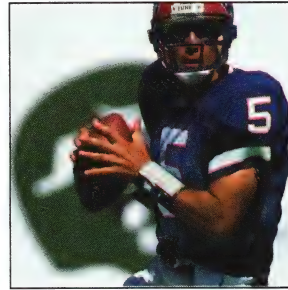
Paradox 3.5 \$795, *Paradox SQL Link* \$495, *Paradox Engine* unavailable at press time

Borland Int'l, Inc.

1800 Green Hills Rd.
Scotts Valley, CA 95067
408/438-8400

Reader service no. 732

There Are Many Ways to Take Control.



Only one puts
you in control
of your personal
computer.

Control Room: The ultimate utility from Ashton-Tate.

Imagine having a built-in computer consultant that can analyze your system's capabilities. Configure it for optimal comfort and performance. Automate dozens of chores. Check your system daily for viruses. Perform hardware and software inventories of entire networks. And make your internal support easier.

Control Room does all this and more in seconds. And in plain English.

You can customize your keyboard to work the way *you* want it to work. Save time with an outstanding disk cache. Change system files in a flash. Undelete files and directories without access to tools that can be damaging when used by novices. Have the answers you need to simplify technical support calls. And get instant response to hundreds of questions. In fact, Control Room replaces up to 25

different utilities. Even if you don't yet own a computer, just pop it into any IBM® or 100%-compatible

for an in-depth summary that helps you choose the system that's right for you.

For more information on the ultimate software utility—one that puts control of your computer at your fingertips—call 1-800-437-4329, ext. 3712.



 Ashton-Tate®

Five lessons other companies have yet to learn about PostScript® printing.

1 *Genuine Adobe® PostScript.®*
You need a true Adobe PostScript printer. The Silentwriter2 290 printer from NEC. Some companies emulate PostScript with clone interpreters or add-on cartridges. Others have limited font capabilities. But that's not the way to produce eye-popping newsletters, or 3D charts. We've known this since we introduced our first Silentwriter LC 890 printer back in 1987.



2 *MS-DOS® and Macintosh® Connectivity.* That's right, the 290 works with both Macintosh and PC-compatibles. And with its standard Centronics parallel, RS-232C, RS-422 and AppleTalk™ interfaces, the 290 is ideal for stand-alone or network environments.

3 *WYSIWYG Screen Fonts.*
As in What-You-See-Is-What-You-Get. Our printer support kit included with every 290 we sell includes software that lets you see all of the printer's 35 scalable typefaces before you print them out. Also included are diskettes that allow you to install the fonts on any Macintosh or under Microsoft® Windows™ in the MS-DOS environment.

4 *Memory.* With a full 2 MB of standard memory, there's simply no more worry. Since now you have more than enough memory to print a full page of text and graphics (letter or legal size) without losing valuable data. Plus the optional user-installable 2 MB of additional memory satisfies your need to store downloadable fonts and overlays.

5 *Software.* The Silentwriter2 290 is the printer of choice for MS-DOS or Macintosh users working with hundreds of the most popular software packages. With an installed base of over 100,000 Silentwriters, our experience with printer software is hard to beat. Meaning you get more than just a printer, you get answers.

Since NEC began making PostScript® printers, we've learned how to stay ahead of the competition. Sure, other PostScript printers can do some of these things, but only NEC puts them all together in the Silentwriter® 2 290, the printer that goes to the head of the class. To find out more about the Silentwriter2 290, call us at 1-800-NEC-INFO. In Canada, 1-800-343-4418.

A New Kind of Home PC

No doubt about it—Tandy wants to be your home-computer company. Tandy's 1000 RL is a savvy marriage of low-cost hardware and engaging software.



The 1000 RL's claim to fame isn't hot hardware but simple-to-grasp software that covers a wide range of home applications, from message taking to check-book balancing to meal planning.

Richard Landry

My home PC is a 386 clone with 8MB of RAM, a super-VGA monitor, a fax/modem combo, and a 150MB hard disk. I bought it the way many street-smart users do—I dialed up a mail-order vendor that offered the hottest features for the lowest price, then spent a month fixing glitches and trading out defective parts via express mail. Now I have a fully debugged system with blazing performance and a fan that drowns out the rap music blaring from my teenager's bedroom.

Problem is, nobody pounds the ivories on my industrial-strength screamer except me. So when Tandy offered me a preview copy of the new 1000 RL, I decided to see whether it would feel more at home than my business powerhouse. I brought it home, plugged it in, and stood back to watch. And guess what—it's been in quiet but constant use ever since.

Software Makes the Difference

Tandy touts the 1000 RL as a superior home machine compared with IBM's PS/1, but hardware specs don't tell the story. The 1000 RL includes a modest 9.54-MHz 8086 processor, 512K of RAM expandable to 640K, CGA graphics, and one 8-bit expansion slot. By contrast, the PS/1 sports a 10-MHz 286 processor and VGA graphics and can grow to include up to 16MB of RAM and three 8/16-bit slots.

Tandy's compromises were made in the name of price: The base unit with monochrome monitor and 720K drive retails for \$750, compared with \$1000 for a similar PS/1 (with 1.44MB floppy drive). A color model with 640K, 20MB hard disk, and 2400-bps modem goes for \$1560, compared with \$2000 for a 30MB color PS/1 with 1MB of memory. Tandy throws in two joystick ports and audio capabilities that cost \$249 extra on the PS/1. Like

the PS/1, the 1000 RL features a compact footprint, comes ready to run out of the box, and is virtually noiseless.

Still, the 1000 RL shines where the PS/1 falls flat—in bundled software. Whereas the PS/1's programs feature clashing interface styles, the 1000 RL boasts a unified *DeskMate* graphical environment with tools that make light work of common DOS tasks. It also includes 24 home applications, from an electronic message center to a check register that lets you see graphically where the money went.

All the programs operate with a point-and-click simplicity. And the proof is in the pudding: My family learned its way around the 1000 RL without any coaching from me, except on how to use the mouse. Tandy hopes the system will find a place next to the phone or in the kitchen where it will get constant use—rather than in a spare bedroom where it will collect dust.

A Home PC—For Whom?

If you're looking to start small and expand your system as you go, the 1000 RL isn't for you. While the PS/1's graphics and expandability theoretically give it the power to run *Windows*, the 1000 RL is strictly for memory-lean DOS programs or *DeskMate*-specific software. That includes many grade-school education programs and a stripped-down version of *1-2-3*, but not many other serious business programs. So it won't please people who buy a PC to bring work home.

But the 1000 RL isn't meant for people already sold on PC technology. It's designed instead to reach the vast majority of people for whom PCs remain a mystery. As it did for us, it might even create two-PC families. ☺

Richard Landry is editor in chief for PC World.

SNAPSHOT

Tandy 1000 RL

Tandy redefines the home PC market with an inexpensive, family-oriented system that's eminently easy to learn and use.

KEY FEATURES

- Easy user interface
- Bundled home applications
- Low-noise operation
- Serial, parallel, mouse, and two joystick ports; microphone and stereo headphone jacks

AVAILABILITY

Immediate

PRICING

\$750 to \$1299 in standard configurations

Tandy Corp.

1800 One Tandy Center
Fort Worth, TX 76102
817/390-3011

Reader service no. 731

Introducing this year's best performance. Solo.



Once again, Compaq unleashes a series of stunning performances.

The new COMPAQ DESKPRO 486/33L and COMPAQ DESKPRO 386/33L Personal Computers are single-user PCs that deliver the utmost in power.

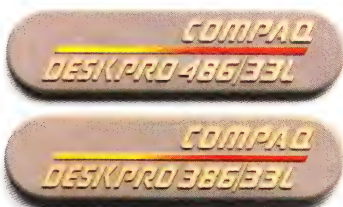
And 33-MHz 486 models of the COMPAQ SYSTEMPRO Personal Computer System strengthen its position as the network server without equal.

For individuals, our powerful new desktops extract the highest performance from Intel's 33-MHz 486 and 386 micro-

processors. So you can run the most complex CAD/CAE, scientific and business applications faster than ever. You can also take advantage of SCO's UNIX operating system and Microsoft's Windows. Plus run the thousands of industry-standard software products available under Microsoft's MS-DOS and MS OS/2.

Both machines fulfill your need for speed. They're optimized with high-speed cache memory designs, fixed disk drives and powerful Extended Industry Standard Architecture (EISA). So nothing slows you down.

Both offer unequaled growth potential with seven EISA expansion slots plus internal room for up to 100 MB of RAM and 1.3 GB of mass storage. The COMPAQ DESKPRO 386/33L also offers an upgrade path to



And this year's best performance. Group.



the power of
486 technology.

For networks, the COMPAQ SYSTEMPRO Family now delivers the ability to employ one or two 33-MHz 486 or 386 microprocessors. It's power you can put to work in the broadest range of connected environments, from resource sharing to departmental database management.

Inside you'll find innovations like a 512-Kbyte ServerCache design, EISA I/O performance and drive array technology. Plus the ability to use up to 11 expansion slots and store up to 4.28 GB of data.

These innovations are complemented by the COMPAQ DESKPRO 386N and COMPAQ DESKPRO

286N Personal Computers, PCs designed with specific network features. Put them all together with Novell's NetWare, Microsoft's LAN Manager, SCO's UNIX or other industry-standard network or multiuser operating systems and you'll get the greatest performance to ever hit the networks.

And the one place to see these performances live is your Authorized COMPAQ Computer Dealer. For the nearest location and more information, call 1-800-231-0900, Operator 131. In Canada, 1-800-263-5868, Operator 131.

COMPAQ

It simply works better.

CH NESS MONSTER DEVOURS SILICON VAL

FIFTH GENERATION SYSTEMS INVITES YOU TO

ENQUIRE

ABOUT FASTBACK PLUS

Incredible proof of reincarnation

MAN LOSES HAIR WAITING FOR DOS

Anytown, USA—The unidentified victim was apparently among the millions of people who still think that DOS Backup and Copy commands are a safe and convenient way to back up their valuable hard disk data. It is not known whether the shocking loss was a result of natural aging while DOS made the backup, or whether the victim pulled his hair out in frustration after discovering that a minor disk error had rendered his entire backup set useless.

According to reliable sources, the tragedy could have been averted if the man had been using **FASTBACK PLUS**, the world's fastest and most reliable backup software.

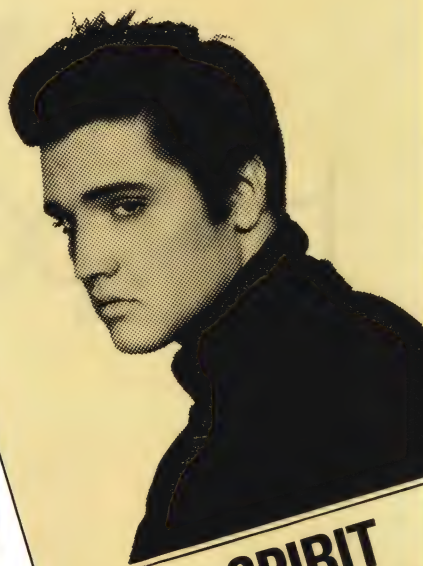
A special commission has been appointed to study ways in which the public can be made aware that **FASTBACK PLUS'** Advanced Error Correction, easy-to-use menu, flexible file and directory selection, automated backup options and other features allow even beginners to make fast, foolproof backups.

Public knowledge of these facts could ease the wide-spread stress and trauma that result from using DOS commands to back up hard disk data.

This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation.



Version 2.1 Now Shipping!
Call for Upgrade Details.



ELVIS' SPIRIT
TRAPPED INSIDE
MICROCHIP

Spreadsheet
invented
by prehistoric

Mom
has
baked
in
your

★
bride
ts on
h steps
2 years

★ ★ ★ ★ ★
C industry
controlled
UFO aliens
★ ★ ★ ★ ★



FIFTH GENERATION SYSTEMS The Creators of FastBack

10049 N. Reiger Road Baton Rouge, LA 70809 (800) 873-4384 (504) 291-7221

Circle 71 on reader service card

PRODUCT OUTLOOK



Edited by MIKE HOGAN

113 PostScript Cartridge

Get the premier page description language straight from the source—and for less—with a plug-in cartridge from Adobe.

114 AutoWord Ease of use and abundant options make this file conversion program suitable for novice and expert alike.

114 Epson LQ-860 Bored with black and white? A color dot matrix printer can energize your output without breaking the bank.

116 NCR PC486/MC33, AST Premium 486/33 Two different paths to high-powered performance let you decide how far and how fast you want to go.

116 QMS PS 410 This font-scaling laser printer from QMS offers high-end features at a low-end price.

118 DataEase SQL This SQL data base front end gives you access to three major OS/2 SQL servers—but at a steep price.

118 Sharp PC-4741, PC-5741 These portables feature 640 by 400 resolution that's easy on the eyes, and one of them is a 386SX powerhouse.

120 ReadRight for Windows, ReadRight Personal OCR's software scans complex pages accurately and works with hand-held scanners.

120 DrawPerfect 1.1 A run-time module lets you show a presentation to the work group at their desks.

122 IRMAtrac Token-Ring Adapter/Convertible DCA's versatile Token-Ring adapter plugs into a standard or Micro Channel bus, supporting twisted-pair cabling at 4 or 16 mbps.

122 Desk Station, T24D/X Plug your portables into a unit that converts them into desktops, or equip them to accept a modem.

124 QEMM 5.1, Desqview 2.3 Two memory managers that pick up where Windows leaves off: the far reaches of high RAM.

124 R:base 3.1 Streamlined to run in 480K, *R:base* is faster—and it's compatible with *dBASE*.

124 25 Plus/Charisma MasterCartridge It starts you off with a healthy helping of popular fonts, and you can add more as needed.

126 Epson ES-300C Epson brightens this 256-level gray-scale scanner with 16.7 million colors.

126 PFS:Preface Shield yourself from the painful realities of DOS with Software Publishing's efficient file management system.

128 Charisma Sharp, speedy business graphics geared to *Windows 3.0*.

128 The Brick Ergo Computing's 8-pound, 386SX portable handles the short haul from home to office.

128 DesignView 2.0 A CAD package that learned from its first release and now supports *Windows 3.0*.

PostScript Cartridge

PostScript From the Source's Mouth

Better late than never: After years of trying to hold the line on PostScript pricing, Adobe has finally taken the bit in its mouth and independently released its page description language in a \$495 cartridge that plugs into the HP LaserJet Series II, the world's most popular laser printer.

Besides being cheaper than PostScript clones like Pacific Data's \$695 PacificPage, PostScript Cartridge is one-and-a-half to three times faster, Adobe claims. It includes Adobe's standard 35 fonts, ranging from Avant Garde to ITC Zapf Dingbats, and works with Type 1 and Type 3 downloadable PostScript fonts. Its *Font Foundry* software generates matching screen fonts for *Windows* and major DOS applications. The cartridge does not, however, work on other Hewlett-Packard printers or Series II compatibles.

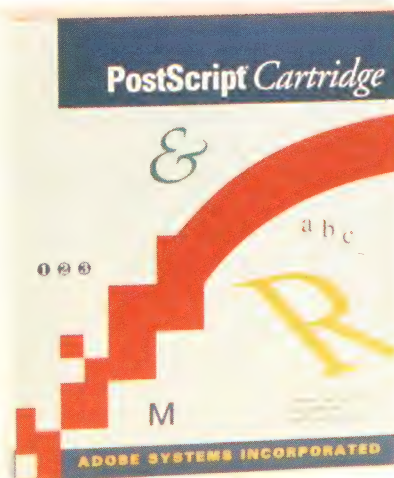
Among the cartridge's most convenient features is a TSR-based program that lets you switch the LaserJet between HP's PCL and Post-

Script without leaving your desk or your application. Network users can rely on the TSR to examine the file to be printed and switch PostScript on or off as needed. The PostScript version 52.3 cartridge is downwardly compatible with the older PostScript drivers that are supplied with most applications.

If 35 fonts aren't enough for you, Adobe offers Adobe Type Cartridges with extra fonts for \$395 each. Type Cartridge 1 includes display fonts such as Hobo, Bodoni, and Lithos. Type Cartridge 2 features Adobe's best-sellers, ranging from Garamond to Tekton Oblique. These additional cartridges plug into the second slot on the right-hand side of the LaserJet.

You'll need at least 1.5MB of printer memory to use Adobe's PostScript Cartridge. Adobe Systems Inc., 1585 Charleston Rd., Mountain View, CA 94039-7900; 415/961-4400, 415/961-3769 (fax).
—Susan Lusty

Reader service no. 735



Adobe's PostScript Cartridge plugs into the LaserJet Series II, and its Font Foundry generates matching screen fonts for major applications.

AutoWord

From Format to Format on Autopilot

If you've finally decided to give up *WordStar* for *Word for Windows*, or if you frequently must hand over documents to co-workers with word processing preferences of their own, you need a conversion program. Enter *AutoWord*, the word processing and graphics translator.

AutoWord translates files to and from over 20 popular word processing packages, including *WordPerfect*, *WordStar*, *Microsoft Word*, *Word for Windows*, and *Ami Professional*, as well as intelligent ASCII and 1-2-3. It also handles TIFF, PCX, PIC, and other leading graphics formats.

Whether you convert files often or occasionally, you want your conversion program to be quick and easy to use. You probably convert from your word processor to one other format most of the time, and you want that process as automatic as possible. You also want the ability to branch out as necessary.

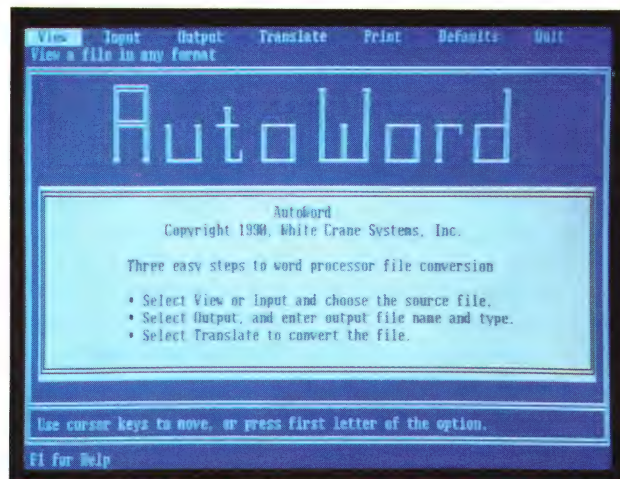
AutoWord automatically detects the format type of an input file and converts it to the export format you chose as the default. You can configure the program to set up default sub-directories for input and output files and assign default output file extensions.

Novices can use either the keyboard or a mouse to select from *AutoWord*'s 1-2-3-style menus and pop-up windows, even tagging multiple files or using wild cards. Advanced users can convert files singly or in batches direct from the DOS command line by supplying the input and output file names and the output format. *AutoWord* saves your bold, underline, margin, and other formatting, and it's very quick.

You can view word processing files and PCX, TIFF,

WPG, and PIC graphics formats prior to translation. You can even print document and graphics files from within *AutoWord*, which includes driver support for Epson printers as well as for PostScript and LaserJet compatibles. Priced at \$149.95, the program requires DOS 2.1 or later and 512K of RAM. White Crane Systems, 6400 Atlantic Blvd. #180, Norcross, GA 30071; 800/344-6783, 404/446-0660, 404/242-8712 (fax). —Steve Bass

Reader service no. 740



AutoWord recognizes the format of your input file and translates it to any of more than 20 word processing or graphics formats, including *WordPerfect*, *WordStar*, *Word*, *TIFF*, *PCX*, and *PIC*.

Epson LQ-860

A Dash of Color at a Dot Matrix Price



The 24-pin Epson LQ-860 prints letter-quality documents and graphics in seven colors at a resolution of 360 by 360 dots per inch.

Even if your simple, black-on-white printouts are adequate, you probably wouldn't mind adding a dash of color to your company logo, livening up those pie charts, or printing the loss portions of your spreadsheet in red. Epson's 24-pin LQ-860 not only handles graphics and letter quality printing, it can also make a seven-color impact at a fraction of the cost of fancier thermal color printers.

Given its compact size (18 inches wide, 16 inches deep, and 9 inches tall), light weight (22 pounds), and dot matrix operating costs, the LQ-860 turns the concept of a personal color printer into a reality. But it also serves as a versatile resource for a department or small business.

The LQ-860 deftly outputs 300 cps in draft mode and a respectable 82 cps in letter quality pica. Your word pro-

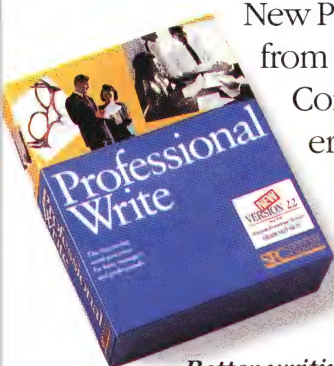
cessing applications should do just fine with its resident draft, Roman, and sans serif fonts, but a multifont module is available for \$73. Top resolution in graphics mode is 360 by 360 dots per inch, and while the output is hardly as glossy as that provided by an \$8000 thermal color printer, you can console yourself with the LQ-860's \$949 price tag. Also, at \$28 for a 2 million-character ribbon, operating costs are definitely reasonable.

Epson includes its usual paper-handling extras. The friction feed loads single sheets automatically. For continuous forms, the tractor feed is a push design, but an optional pull tractor-feed mechanism is available for \$73. Standard paper parking lets you switch to single-sheet letterhead or envelopes without having to remove continuous form paper. Top-of-form memory, micro-line adjustment, and a tear-off bar to help with invoices and other short forms are all standard. A single-sheet bin feeder costs \$240. Epson America Inc., 23530 Hawthorne Blvd., Torrance, CA 90505; 800/922-8911. —Mark Henricks

Reader service no. 737

The software that made writing easier now makes your writing better.

The leading executive word processor now includes a custom integration of the leading grammar-checker – Gram•mat•ik™ IV.

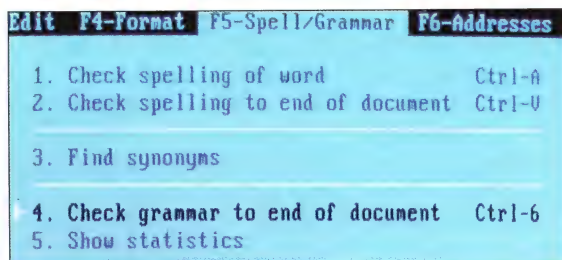


New Professional Write® 2.2 from Software Publishing Corporation detects errors in grammar, style, usage and punctuation. Then recommends a way to correct them.

Better writing for busy executives.

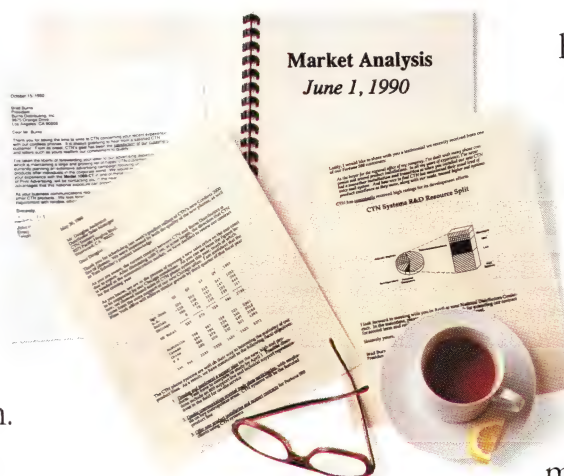
This new version also supports many more printers, including

HP® LaserJet® III, LaserJet IIP, and DeskJet® Plus. And offers a new line of HP font support, as well as the 25 in One!™ III cartridge from Pacific Data Products.



Check your grammar as easily as you check your spelling.

That's not all. Professional Write 2.2 has lots of other new features — automatic



Greatly expanded printer and font support.

hyphenation, unlimited document size, enhanced import and export of delimited ASCII files, and much, much more. It's also available in Professional Write's new LAN version.

The best news is that even with all these new features Professional Write is still the word processor that's easy to learn and easy to use. No ten-pound manuals. No training.

Lots of new features without any compromise in ease of use.

The easiest way to prove it, of course, is to show you. Send for your free trial disk today. You'll be a better writer tomorrow.

SPC SOFTWARE PUBLISHING CORPORATION

FOR A FREE TRIAL DISK, CALL 1-800-345-2888, OPERATOR 205, IN U.S. AND CANADA

For upgrade information, call 303-799-4900 (U.S.) and 416-566-0566 (Canada).

Professional Write is a registered trademark of Software Publishing Corporation. © 1990 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210. Grammatik is a trademark of Wang Laboratories. HP, LaserJet, DeskJet are registered trademarks of Hewlett-Packard Company. 25 in One! is a trademark of Pacific Data Products.

Circle 31 on reader service card

NCR PC486/MC33, AST Premium 486/33

Choose Your Fork in the 486/33 Road

Even after you've decided to go with a 33-MHz 486 for your CAD, technical, or file server application, you must decide just how far out on the cutting edge you want to get. AST's Premium 486/33 represents the less risky and expensive route, keeping to the beaten track of PC design, while NCR's PC486/MC33 takes the road less traveled.

AST uses its familiar Cupid-32 ISA-compatible architecture that places CPU, up to 4MB of memory, and all CPU-specific hardware on one modular board. The idea is to let you upgrade your CPU or even move on to the Extended ISA bus standard without having to scrap your system.

The Premium 486/33 lets you expand memory to 16MB on the system board and to 48MB by means of two optional 32-bit cards. A 5¼-inch, 1.2MB floppy drive occupies one of three externally accessible half-height drive bays. Inside the roughly 19-by-17-by-6-inch case are two more half-height bays.

The Model 115's built-in drive interface accommodates the 25ms, 110MB drive's embedded controller. One parallel and two serial ports are included, but you'll use one of the seven ISA slots—three 32-bit, three 8/16-bit, and one 8-bit—for an optional VGA adapter. An EISA upgrade to the motherboard costs \$1250.

NCR's PC486/MC33 is built around the 486/33 but clearly oriented toward future expansion. The 486's power is complemented by a Micro Channel chip set that allows intelligent peripherals and the CPU to work cooperatively by swapping control of the bus.

Highly integrated, the PC486/MC33 has seven custom ASICs, including NCR's

16-bit Super VGA graphics on the system board. There's also room for up to 16MB of memory. You can boost system memory to 64MB with 16MB, 32-bit memory boards in the four dedicated memory slots. The NCR's dual-port interleave memory bus allows a peripheral to access memory at the same time as the CPU. Result: You run at zero wait state while multitasking, and there's an upgrade path for multiple processors.

Measuring only 17 by 15 by 5 inches, the NCR machine still gives you four free MCA expansion slots. A separate I/O slot is occupied by a SCSI controller. You'll also find six half-height and three full-height drive bays.

NCR's PC486/MC33 costs \$15,995 with 4MB of memory, a 20ms 100MB SCSI hard drive, Super VGA graphics, and a 1.44 3½-inch floppy. The AST Premium 486/33 is



NCR's PC486/MC33 is a 486-based system that takes advantage of Micro Channel architecture, custom ASICs, and plenty of memory for maximum throughput during multiple operations.

\$11,495 for the Model 115 with 4MB of memory, a 5¼-inch 1.2MB floppy, and a 110MB drive. —*Mark Henricks*
NCR Corp., Workstation Products Division, 1601 S. Main St., Dayton, OH 45479;

800/541-3333.

Reader service no. 738

AST Research Inc., 16215 Alton Pkwy., Irvine, CA 92713-9658; 714/727-4141, 714/727-9363 (fax).

Reader service no. 739

QMS PS 410

This Laser Knows PCL and PostScript

QMS's PS 410 breaks new ground among inexpensive font-scaling laser printers. This 4-ppm, \$2795 device offers not only all the familiar PostScript benefits but also a generous collection of 12 built-in scalable typeface families and even automatic printer emulation switching.

Because the PS 410 uses Adobe's PostScript interpreter, it works with standard PostScript drivers. But not every application includes such a driver, so the printer emulates an HP LaserJet Series II as well. No big deal? What is a big deal is that it samples incoming data on a job-by-job

basis and switches automatically between PostScript and LaserJet Series II emulation. At best, other printers switch emulations via a software command; some printers require that you get up and switch settings or turn the printer off and on again.

This capability makes the PS 410 ideal as a network printer for a small work group where print jobs from different applications with different printer drivers arrive one after another. The PS 410 supports three input ports (parallel, serial, and AppleTalk), all of which can be active at the same time, enabling net-

worked Macs and PCs to use the printer.

A generous array of 12 built-in Adobe-licensed typeface families comes standard. (Typically, a family includes regular, italic, bold, and bold italic typefaces; most low-end font-scaling printers give you four or five families.)

You also get 2MB of RAM—more than enough for a full page of graphics—expandable to 6MB. A 50-sheet paper bin is built-in, and a 250-sheet tray is optional. Consumables can be changed with one cartridge. QMS, Inc., Sales and Marketing Support, One Magnum Pass, Mobile, AL 36618; 800/631-2692, ext. 922, 205/633-9064 (fax). —*Michael Goodwin*

Reader service no. 736

The numbers outside.

406TM

386TM

386TM 54

DataEase SQL

One Front End for Three Servers

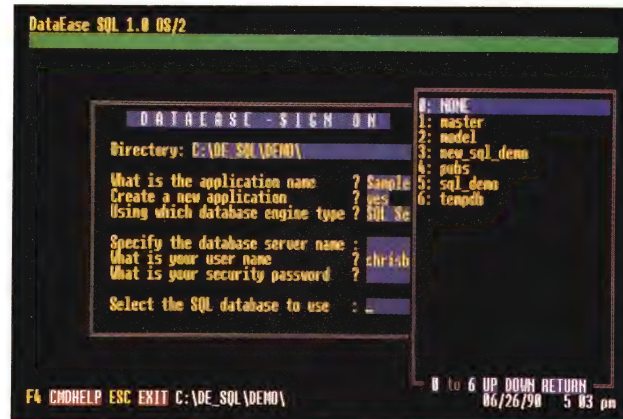
Finally, SQL data base front ends are arriving. One of the first non-dBASE language competitors on the scene is *DataEase SQL*. A superset of the popular nonprocedural data manager *DataEase 4.2*, *DataEase SQL* can query either local *DataEase* tables or remote tables located on a networked data base server.

Like Borland International's *Paradox SQL Link*, *DataEase SQL* provides access to the three major OS/2-based SQL servers: Microsoft/Sybase's *SQL Server*, Oracle's *Oracle Server for OS2*, and IBM's Extended Edition OS/2 Database Manager. The *SQL Server* front end just started shipping, while modules for Oracle and IBM servers are coming.

You need to know on which server your tables are located.

Once accessed, a table appears like any other in *DataEase*, and you can manipulate it via the familiar menus. Data from several servers and server types can be integrated in a single *DataEase* form. You query SQL data as you would local files, simply selecting SQL statements from the menus. *DataEase SQL*'s querying system is based on its fourth-generation language (DQL), a superset of SQL, so developers can embed optimized SQL statements.

Each query is optimized for the server to which it speaks, so, for example, you can exploit the greater efficiency of *SQL Server*'s stored procedures. Once you copy data to your PC, you can manipulate it with the full range of relational operators, joining data from different data bases. You also can



DataEase SQL, a superset of *DataEase*'s nonprocedural data manager, lets you query tables in the three major OS/2-based SQL data base servers.

use the program as a SQL converter, downloading a file from an IBM server, for example, and copying it into *SQL Server* format.

Pricing is on the steep side. *DataEase SQL* is expected to cost \$995 for each developer's version, which includes an application generator, and \$350 for each workstation version sans application generator. In

addition, you must pay \$1500 for the front ends to each type of server you want to access. *DataEase 4.2* will continue to be sold and upgraded separately; no upgrade plan for *DataEase SQL* has been announced. *DataEase Int'l, Inc.*, 7 Cambridge Dr., Trumbull, CT 06611; 800/243-5123, 203/374-8000. —Eric Brown
Reader service no. 745

Sharp PC-4741 and PC-5741

Sharper Portables

Two new portables from Sharp ease both eyestrain and processing bottlenecks on those long road trips.

First, Sharp's PC-4741 gives you a razor-sharp, triple-supertwist display with 640 by 400 resolution in a near-notebook form factor. In addition to this double-scan CGA backlit screen, you get 10-MHz V40 power, 640K of memory, and a 29ms 40MB hard drive. The 8½-pound package, including a 2½-hour battery, measures only 11 inches square by 2¼ inches high.

You can boost memory to 1.6MB with a 1MB board in the proprietary slot, or you can use that space for an external CRT adapter. A second propri-

etary slot holds a 2400-bps modem or a serial port.

Meanwhile, thanks to a 20-MHz 386SX CPU, Sharp's PC-5741 brings far more power in a convenient package. You can expand the standard 2MB of memory to a robust 12MB by adding a proprietary memory board. A second proprietary slot holds either a 2400-bps modem or a serial port. A 10-inch double-supertwist VGA display (with 640 by 480 resolution) gives you 16 levels of gray, and the PC-5741's CRT adapter lets you add an external monitor.

The 14-pound weight of the PC-5741 includes a 2-hour nickel-cadmium battery. A second \$399 battery pack screws onto the back, adding 4 pounds, 10 ounces, and another 3 hours of computing. An AC adapter is standard.

You'll pay \$2699 for the



It's a little hefty for a notebook, but Sharp's PC-4741 gives you a double-scan CGA display, 10-MHz power, and a 40MB hard drive.

standard PC-4741 with 3½-inch 1.44MB floppy, 640K of memory, DOS 3.3, and parallel, serial, and external 5¼-inch floppy drive ports. The 1MB expanded memory card costs \$419. A 2400-bps modem is \$449. The PC-5741 is \$5595,

including a 25ms 40MB hard drive and a 3½-inch, 1.44MB floppy. Sharp Electronics Corp., Sharp Plaza, Mahwah, NJ 07439; 201/529-9500, 201/529-8919 (fax). —Mark Henricks

Reader service no. 749



The computer inside.

Since buying a computer today is such a numbers game, here's a simple rule of thumb. Look for 386™ SX, 386™ or 486™ on the outside to be certain that you have Intel technology on the inside. From the company that invented the microprocessor. The company that has shipped over 10 million 32-bit processors. The same company that's investing over \$1 billion this year

to make sure the computer inside your computer has the technology, power and compatibility to take you into the future.

intel®

The Computer Inside.™

©1990 Intel Corporation.

The Computer Inside, 386 & 486 are trademarks of Intel Corporation.

Circle 109 on reader service card

ReadRight for Windows, ReadRight Personal

Scan Handlers Take Precise Approach

Two releases from OCR Systems speed optical character recognition by adopting a *Windows 3.0* interface and adding technology that more accurately captures text from pages that mix words with pictures.

ReadRight for Windows is a true child of the *Windows 3.0* environment, taking full advantage of its windowing interface and memory management capabilities to give you more perspectives on larger documents. The program exploits extended, expanded, and disk-based virtual memory as appropriate and lets you view work in progress through several open windows.

You not only see a complete image of the document being scanned but get window views of magnified versions of words that didn't scan correctly. You can type in your corrections before *ReadRight for Windows* completes its text file. Another window lets you adjust scanning contrast.

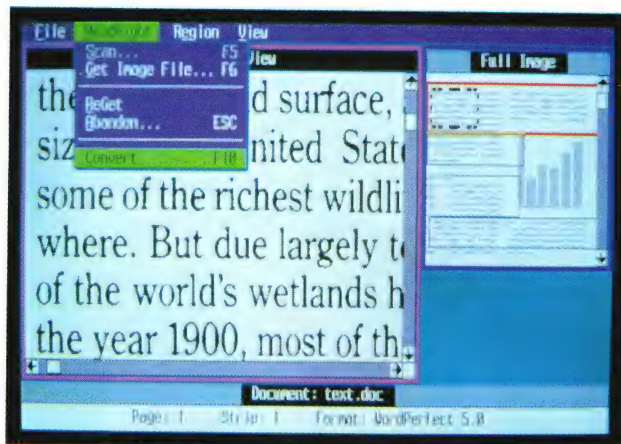
ReadRight for Windows' recognition capabilities are significantly more advanced than those of the DOS-only *ReadRight 2.01* (which will still be available). Among improvements are more options for setting the parameters by which the program recognizes what's text and what's graphics on a page. Better handling of degraded and italic text, the maintenance of original document formatting, recognition of a wider range of type sizes, and the ability to process double-sided pages or several pages consecutively round out *ReadRight for Windows'* features.

ReadRight Personal requires less memory and addresses the special problems of hand-held scanners. It has a graphical user interface that's

quite similar to *Windows'* and gives you the same full-page and magnified views of your document for purposes of catching mistakes, setting contrast, and separating text from graphic regions.

ReadRight Personal runs in 640K of memory. In addition to having the full OCR capabilities of *ReadRight 2.01*, it has a number of features hand-scanner users will appreciate—including the ability to compensate for a wobbly hand that can't seem to scan straight down a page.

ReadRight for Windows costs \$595. It requires *Windows 3.0*, DOS 3.0, and 4MB of



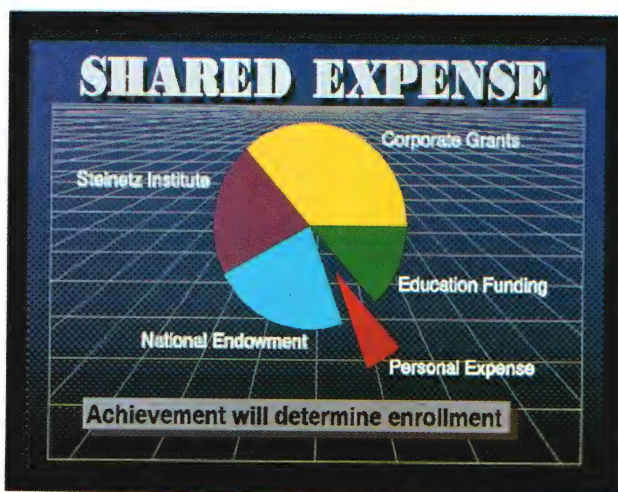
OCR Systems' *ReadRight Personal* smooths the way for hand-held scanners and even adjusts for wobbly scanning.

RAM. *ReadRight Personal* sells for \$249 and needs DOS 3.0 and 640K of memory. Both require a hard disk, and a mouse is recommended. OCR

Systems, Inc., 1800 Byberry Rd. #1405, Huntingdon Valley, PA 19006; 800/233-4627, 215/938-7465 (fax). —Mike Hogan
Reader service no. 744

DrawPerfect 1.1

Once More With Free Run Times



With version 1.1's run-time capability, you can send executable DrawPerfect slide shows to your co-workers or clients.

In record time, WordPerfect has begun shipping *DrawPerfect 1.1*, an upgrade of its new drawing program.

The principal reason for the quick release is a run-time module that lets you copy and distribute on-screen slide shows to work-group mem-

bers. Thus, others can view your fully executable graphic presentations without loading a copy of *DrawPerfect*. Also included are advanced options for moving between screens in your desktop presentations, including effects such as blinds and diagonal sweeps.

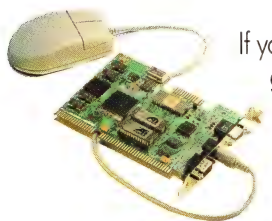
Other new editing features include the ability to align objects on a page or in relation to each other—left, right, above, or below—and center them vertically or horizontally. You can add and delete points in objects and convert lines to polygons and back again. Close a line to form a polygon, and you can fill it with colors and patterns.

DrawPerfect 1.1 lets you group and ungroup objects to edit and move them more quickly. And you can import more types of files into your drawings, including EPS files and graphs from 1-2-3. Support for 50 more printers has been added, bringing the total to 500. *DrawPerfect* requires DOS 2.0 or later and 384K of memory. Updates to the \$495 program are available to registered users who send the title page of their version 1.0 manuals and \$15 to WordPerfect Corp., DrawPerfect Update, 1555 N. Technology Way, Orem, UT 84057; 800/321-4566. —Mike Hogan

Reader service no. 751



VGA WONDER+ FASTER THAN VRAM



If you're about to buy a graphics card, make sure you don't get fleeced. And if anyone tells you that VRAM is the fastest, he's pulling the wool over your eyes. VGA WONDER+* what ewe...er...you need.

While others follow, VGA WONDER+ leads the flock with remarkable resolution, fabulous colors and outstanding value. VGA WONDER+ offers an optimized architecture including fast 16-bit bus support and fast page mode memory which assures maximum speed...that's faster than VRAM and other VGA cards. Based on ATI's

original award-winning VGAWONDER* and available in 256K and 512K versions, you receive:

- High resolution non-interlaced and interlaced 1024x768 plus 800x600 graphics;
- 100% register-level compatible in all modes;
- Extensive drivers support including Windows 3.0*, Presentation Manager* and AutoCAD* Display List;
- Ergonomic 70Hz refresh rate in 1024x768, 800x600 and 640x480;
- Easy, switchless installation;
- Free Microsoft* compatible bus mouse;
- And much more.

With VGA WONDER+, performance is in the baaaaaaag.

See us at Booth N1856
Sand Expo and Convention Center
COMDEX/Fall '90
November 12—16, 1990
Las Vegas, Nevada

For more information,
contact your supplier or

ATI Technologies Inc.
3761 Victoria Park Avenue
Scarborough, Ontario
Canada M1W 3S2
Tel: (416) 756-0718
Fax: (416) 756-0720

ATI
TECHNOLOGIES INC.
Technology you can Trust.

ATI's Family of Products includes: 8514/ULTRA • 8514/Vantage • 2400etc/e • 2400etc/i • 9600etc/e

Copyright © 1990 ATI Technologies Inc.*. Trademarks are registered by their respective companies.

Circle 302 on reader service card

IRMAtrac Token-Ring Adapter/Convertible

A Two-Faced, Two-Speed LAN Board

Digital Communications Associates' LAN adapter, the IRMAtrac Token-Ring Adapter/Convertible, brings the same versatility to Token-Ring networks that DCA's IRMA 3 Convertible board brings to PC-to-mainframe links.

The IRMAtrac board can be plugged into any PC, XT, AT, or Micro Channel machine, since one edge has a standard 8-bit edge connector and the other has a 16-bit connector for Micro Channel systems. Just flip the appropriate edge downward, attach the standard or the Micro Channel slot cover/mounting bracket, and you're ready to slip the board into a free slot.

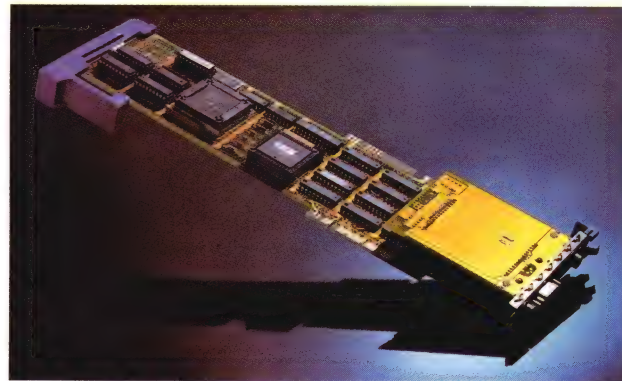
Handling those different system bus architectures isn't the only trick the IRMAtrac has up its sleeve—it can also communicate at different speeds over different Token-Ring LAN media.

The IRMAtrac uses replaceable Ring Interface Modules (RIMs) so that you can configure the board to run on either 4-mbps shielded or unshielded twisted-pair cable or 16-mbps shielded twisted-pair. You just add the appropriate RIM from among the two that ship with the board.

Since it's equipped with an on-board processor and 128K of RAM for MCA bus mastering, IRMAtrac can process communications in the background on an MCA compatible while the CPU is busy with other applications. The board supports industry standards for Token-Ring hardware and software including DCA's 10Net Plus LAN operating system, Microsoft LAN Manager, IBM PC LAN, Novell NetWare 286 and 386, and 3Com 3+ Open.

The board is software con-

figurable, so no adjustment of DIP switches is needed. You select data transmission speed, interrupt levels, and so on via a menu-driven program. IRMAtrac sells for \$895. Digital Communications Assoc., 1000 Alderman Dr., Alpharetta, GA 30202-4199; 404/442-4762. —Mike Hogan
Reader service no. 746



IRMAtrac Token-Ring Adapter/Convertible works on an ISA or MCA bus and can communicate at different speeds over different Token-Ring LAN media.

Desk Station, T24D/X

Toshiba Enhances Its Portables

Toshiba has added several enhancements and options to its portable line, ranging from docking stations to better battery packs and larger hard drives.

The Desk Station elevates four of Toshiba's notebooks—the T1000SE, T1000XE, T1200XE, and T3100SX—to the status of desktop machines. Plug your portable into the Desk Station, and you can instantly connect to printers, modems, serial devices, your network, an external keyboard, an external monitor,

and an expansion bus. About 15 inches wide by 11 inches deep and only 3 inches high, the Desk Station for the T1000SE, T1000XE, and T1200XE sells for \$1199 and comes with two full-length 16-bit slots or one full-length and one half-length slot, plus a proprietary slot for a Toshiba modem or Ethernet card—all 16-bit. You also get two serial ports, a parallel port, and a DC output port.

The Desk Station for the T3100SX is of a very different design—about 16 inches wide

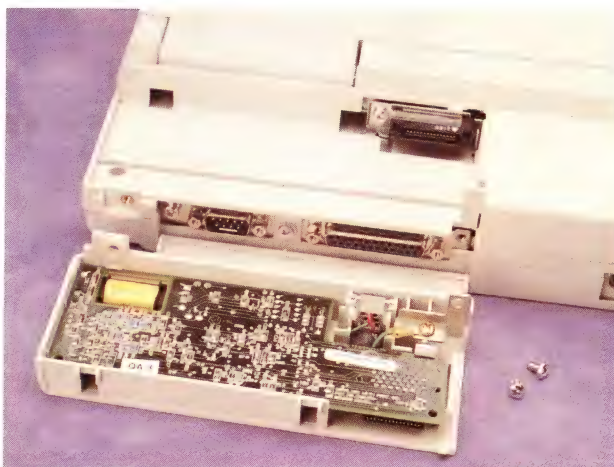
by 6 inches deep, but 9 inches high. For \$1499, you get two full-length 16-bit slots and a full 8-bit slot, two serial ports, a parallel port, a DC output port, an RJ11 modem port, and a keyboard port.

Toshiba has also unveiled a cellular modem option that fits the above laptops as well as its T1200, T1600, and T3200SX. The T24D/X offers both a standard RJ-11 telephone connection and an optional intelligent cellular telephone interface for modem access via a cellular network. Spectrum Cellular's SPCL Protocol ensures error-free transmissions over the cellular system. The T24D/X provides V.22bis and Hayes compatibility at 2400 bps and MNP-5, V.42, and V.42bis error correction and data compression for 9600-bps transmissions.

Larger hard disks are now available for the T3100SX and T3200SX. A T3100SX with a 25ms 80MB drive retails for \$6799, while the T3200SX with a 19ms 120MB drive sells for \$6999. Both include a 16-MHz 386SX processor, 1MB of memory expandable to 13MB, and a VGA gas plasma display. Toshiba America Information Systems, Computer Systems Division, 9740 Irvine Blvd., Irvine, CA 92718; 800/334-3445.

—Mike Hogan

Reader service no. 753



Toshiba's T24D/X cellular modem gives its laptops both a standard RJ-11 telephone connection and an optional intelligent cellular telephone interface for modem access via a cellular network.



If you're filing documents in the depths of your PC, finding them again can be a tedious search. But once you organize your hard disk with XTreePro Gold™, you'll find every file, every time.

You see, XTreePro Gold is the most complete file manager you can buy. Now you can forget all those difficult DOS commands. Its unique global features let you see your entire hard disk—and all the files organized on it. For instance, Autoview lets you browse through your file directory and

look at each file without leaving the program. Or use the Split Window to copy or compare groups of files across different drives or directories. You can

tag, copy, and move files in a snap.

Forget a file name? Good news: XTreePro Gold locates files by content, too. You can even edit files within XTreePro Gold by using the Text Editor. Or open any file and its application with a key stroke or a click of the mouse. XTreePro Gold is that simple to use.



Call XTree for a detailed brochure at 1-800-634-5545. In California, call 1-800-551-5353. For information in Canada, call 1-416-866-8592. Other international, call 1-805-541-0604. And find out how easy it is to turn your straw into gold.



XTREE
C O M P A N Y

The world leader in disk management

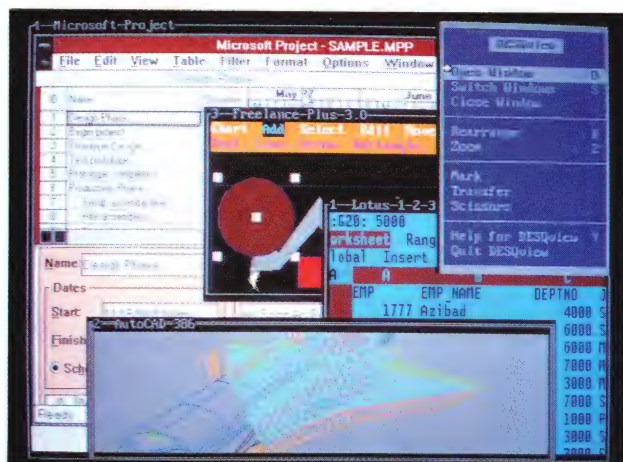
XTreePro Gold is a trademark of Executive Systems, Inc.

Circle 340 on reader service card

**If you're not using
XTreePro Gold, here's
how you're filing
your documents.**

QEMM 5.1, Desqview 2.3

Quarterdeck Takes Windows Challenge



Quarterdeck's latest Desqview brings the memory-grabbing capabilities of its QEMM memory manager to Windows applications.

Microsoft claims that *Windows 3.0's* memory-handling capabilities have eliminated the need for 386 memory managers like Quarterdeck's *QEMM* and multitaskers such as Quarterdeck's *Desqview*. In fact, until now *Windows 3.0* wouldn't work with either

product or with other memory managers. Quarterdeck rises to the challenge with *Windows*-compatible versions of *QEMM* and *Desqview*.

Windows lacks one major feature found in memory managers like *QEMM*: the ability to place device drivers and

RAM-resident programs in the unused memory between 640K and 1MB. That inability means each driver and TSR loaded before *Windows* reduces the RAM available to every non-*Windows* application run inside *Windows*; if you're on a network, you can't expect to get more than 500K of RAM for any standard DOS application. Enter version 5.1 of *QEMM*, which supports all three of *Windows 3.0's* memory-handling modes, letting you run large DOS applications inside *Windows 3.0*.

Similarly, if you're torn between buying *Windows* and *Desqview* because many programs that use DOS extender technology, such as *Paradox 386*, won't work in *Windows*, don't worry. *Desqview 2.3* will support *Windows 3.0* in real or standard modes so that you

can run *Windows*, along with its own applications, inside a single *Desqview* window. *Desqview 2.3* won't support *Windows' 386-specific* enhanced mode, but the principal advantage of that mode is multitasking non-*Windows* applications, a capability you get through *Desqview*.

QEMM costs \$99.95 and requires DOS 2.0 and a 386 with 1.8MB of RAM; upgrades are \$40. *Desqview 2.3* sells for \$129.95 and requires DOS 2.0 or later and 640K of RAM; upgrades are \$35. The two programs are bundled as *Desqview 386* for \$219.90, with upgrades to past versions available for \$65. Quarterdeck Office Systems, 150 Pico Blvd., Santa Monica, CA 90405; 213/392-9851, 213/399-3802 (fax). —Lincoln Spector

Reader service no. 748

R:base 3.1

Tucking and Rolling Out a New Version

With its mouse-driven interface and query-by-example features, *R:base 3.0* was a ground-breaking upgrade for Microrim. But users howled about its hefty 520K memory requirement.

As a result, Microrim has tucked and squeezed *R:base* so that it runs in 480K of conventional memory. Not only does *R:base* version 3.1 offer significant performance enhancements and a more polished interface, but the lower memory requirement makes this relational data base accessible and convenient for many more users.

Microrim also has taken note of the real world by incor-

porating a "dBASE connector" that will let *R:base* applications read, query, write, and edit dBASE files in their native format alongside *R:base* tables. That means you can have a dBASE application and an *R:base* application side by side, put common information in a shared dBASE file, and never have to worry about data integrity problems or file import/export again. The upgrade is free to registered 3.0 owners and \$195 to registered owners of previous versions. Microrim, 3925 159th Ave. NE, Redmond, WA 98052; 206/885-2000, 206/881-7723 (fax). —Ed Bott

Reader service no. 752

25 Plus/Charisma MasterCartridge

Laser Fonts With an Upgrade Path

When you start out in desktop publishing, you focus on the price of your laser printer. Then you're surprised at how much you spend for font cartridges—and how quickly those cartridges pile up, many with overlapping sets of fonts.

Elite Business Applications takes aim at both problems with its upgradable font cartridge, the 25 Plus/Charisma MasterCartridge. For \$399, you get the MasterCartridge with 15 monospaced and proportional typeface families, including Helvetica, Times Roman, Courier, and Prestige Elite. You also get not-so-common "typefaces" such as bar codes, postal bar codes, and Zapf Dingbats. Some come in bold and italic, and most range from 6 to 30 points. For the small print that you don't want anyone to read, there are fonts as small as 3.6 points.

But the beauty of the MasterCartridge is that you can add modules simply by plugging them into one of four slots. The modules cost \$99 each, but they include such avant-garde offerings as Avant Garde, Headlines, Century Schoolboy, Donn Casal, Garamond, Optime, Palatino, and Park Place. Want a custom module? For a cost of \$99 to \$149, Elite will make a cartridge incorporating your logo, forms, symbols, and frequently used designs.

Compatible with most leading software drivers, the 25 Plus/Charisma works on the HP LaserJet II, IID, IIP, and III as well as Brother, Wang, and Olivetti printers. Elite Business Applications, 28 Rte. 3 N, Millersville, MD 21108; 800/942-0018, 301/987-9093 (fax). —Susan Lusty

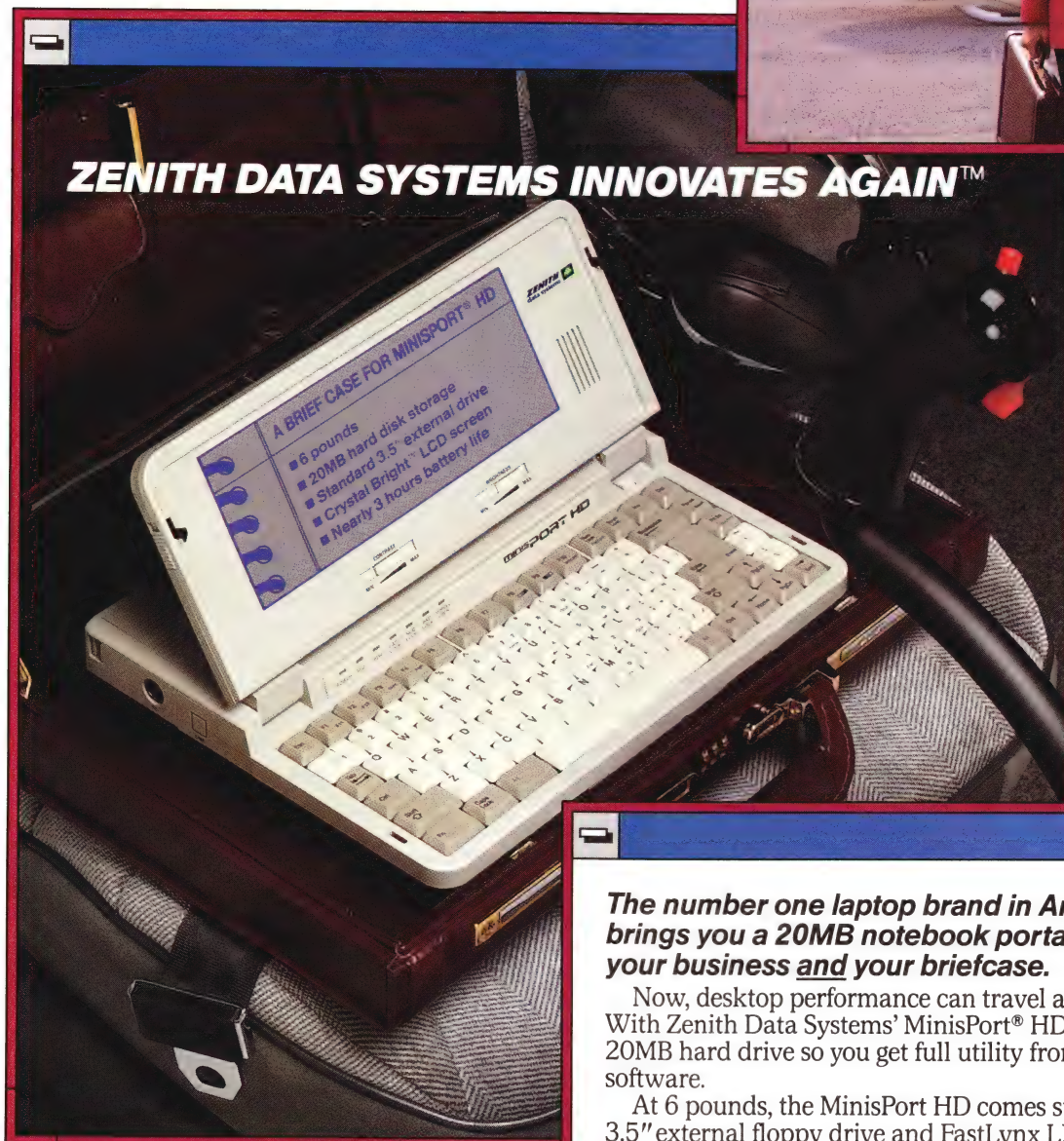
Reader service no. 747

***"Number crunching's for
when I'm in the office. Out here,
just give me a great little PC.
And I mean little."***

**NOW WITH
20MB HARD DRIVE**



ZENITH DATA SYSTEMS INNOVATES AGAIN™



***The number one laptop brand in America* now
brings you a 20MB notebook portable that fits
your business and your briefcase.***

Now, desktop performance can travel as light as you do. With Zenith Data Systems' MinisPort® HD—featuring a fast 20MB hard drive so you get full utility from your favorite software.

At 6 pounds, the MinisPort HD comes standard with a 3.5" external floppy drive and FastLynx LX™ for easy data transfers to and from other PCs. A Crystal Bright™ backlit LCD screen that displays color applications in 8 shades of gray. And nearly 3 hours of battery life.

So put real desktop capacity in your briefcase. With the sleek MinisPort HD. For your nearest Zenith Data Systems Medallion Reseller, call: 1-800-523-9393.

ZENITH
data systems



Groupe Bull

Graphics simulate Microsoft® Windows™ version 3.0, a product of Microsoft Corporation. MinisPort is a registered trademark and Crystal Bright is a trademark of Zenith Data Systems Corporation. *Source: 1990 Dataquest estimate for U.S. battery-powered laptops.

© 1990 Zenith Data Systems Corporation

Circle 290 on reader service card

Epson ES-300C

A Royal Scanner at a Humble Price

When you want to create a royal impression, sometimes even photo-quality black-and-white images aren't enough. Desktop publishers and presenters looking forward to a more colorful future need cast their gaze no farther than the familiar Epson name. The dot matrix printer king has introduced a gray-scale/color scanner that sells for less than \$2500—a price even occasional publishers can afford.

Epson's ES-300C scans up to 256 levels of gray and 16.7 million colors at up to 300 dots per inch. The ES-300C can output at 600 dpi—a facility that products like Intel's *Visual Edge* image enhancer put to good use.

At \$1995 for the scanner and \$495 for an interface kit

(an 8-bit board bundled with image-editing software), Epson's flatbed unit is slightly less expensive than Microtek's equivalent, the \$2695 MSF-300Z. Epson sweetens the deal with an unusually wide selection of software for both Windows and DOS. You get Windows-based *Colorlab ES-300C* and DOS-based *Color Halo Scan*, both of which excel at image capture, plus the additional image-manipulation powers of *Image-In* and *Picture Publisher Plus*.

The 20-pound unit handles images up to 8½ by 11 inches and can output directly to Epson color dot matrix printers and the Hewlett-Packard PaintJet. The ES-300C's proprietary scan engine won't emulate other popular scan-



Epson's affordable ES-300C scans 256 levels of gray and 16.7 million colors at up to 300 dpi—and comes with a healthy amount of software.

ners like HP's ScanJet, but Epson plans to offer drivers for leading programs such as Z-Soft's *PC Paintbrush IV Plus*.

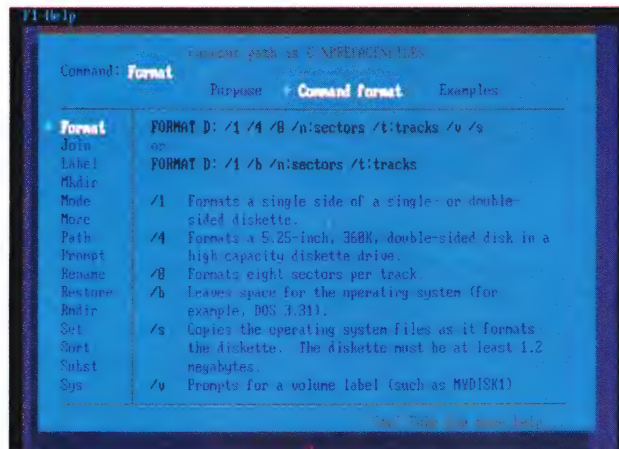
Image-In and *Picture Publisher Plus* require at least

1MB of RAM and Windows 2.0 or a later version. Epson America, Inc., 23530 Hawthorne Blvd., Torrance, CA 90505; 800/922-8911. —Daniel Tynan

Reader service no. 741

PFS:Preface

Dressing Up DOS With Menus, Help



PFS:Preface takes the mystery out of the C: prompt with a menu system and DOS shell combination that includes context-sensitive DOS help.

Software Publishing has stepped into the ongoing grudge match between users and DOS with still another menuing and file management

system designed to let you remain happily ignorant of DOS. *PFS:Preface* differs little from the many existing menu system/DOS shell combinations

except in speed.

At the most basic level, *PFS:Preface* helps you organize your software into menus without having to learn DOS syntax. You launch an application simply by typing the number that appears beside it. Beyond that, *PFS:Preface* streamlines common file and directory management tasks by letting you use a pulldown menu or an <Alt>-key combination to access help or execute common DOS functions. The program gives you context-sensitive help for *PFS:Preface* itself, and a window provides lucid explanations of common DOS commands. And *PFS:Preface* is network ready, so you can display remote menus and perform other operations on the disks that the menus serve.

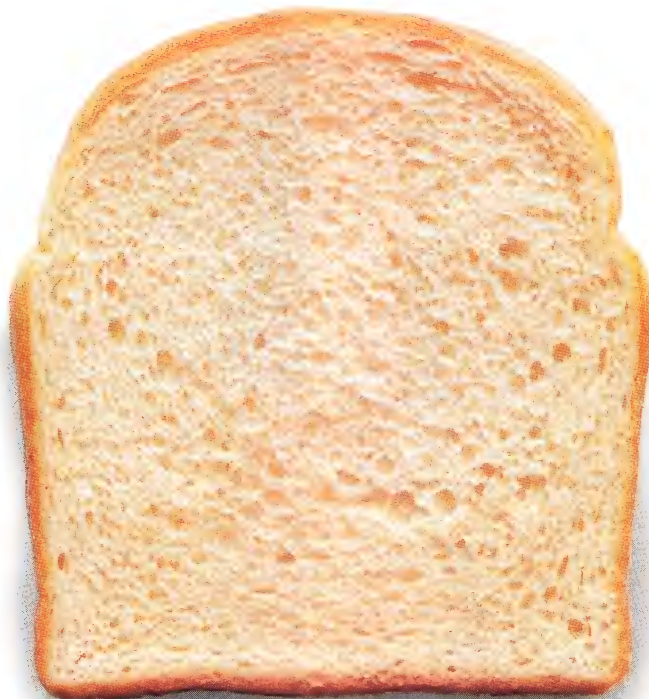
When you get down to building menus, *PFS:Preface* saves you time by searching your hard disk for the more

than 100 applications that it recognizes and automatically loading the ones it discovers into your main menu. You can opt to skip this step and specify programs yourself, and you can even organize them into submenus that cascade from main menu choices.

When an application is loaded, the *PFS:Preface* screen quickly swings aside like a theater curtain, and the program called for pops onto the screen. Although the file manager is not as powerful as *Norton Commander*'s, it does simplify routine work such as copying, deleting, renaming, and moving files as well as viewing ASCII files. The \$69 *PFS:Preface* requires DOS 2.1 or later, 325K of RAM, and a hard disk. A mouse is optional. Software Publishing Corp., 1901 Landings Dr., Mountain View, CA 94039-7210; 415/962-8910. —Steve Bass

Reader service no. 742

This is what you pay for
our tape backup.



This is what you get.



Even if you didn't know
their price, chances
are you'd still choose
Everex tape backup systems.

They're so easy to use, most
novices won't even need the

manual. Yet they still offer
everything the most sophisti-
cated user could desire,
from diagnostic software to
automatic schedulers.

To find out more, call

1-800-821-0806 for the name of
your nearest Everex Reseller.

Chances are, you'll get more
backup than you need. For
less money than you'd expect.

EVEREX
EVER for Excellence

Everex is a trademark of Everex Systems, Inc. ©1990 Everex Systems, Inc.

Circle 69 on reader service card

Charisma

Word Charts, Slide Shows for Windows

What better application for *Windows 3.0*'s graphical interface and memory management than business graphics?

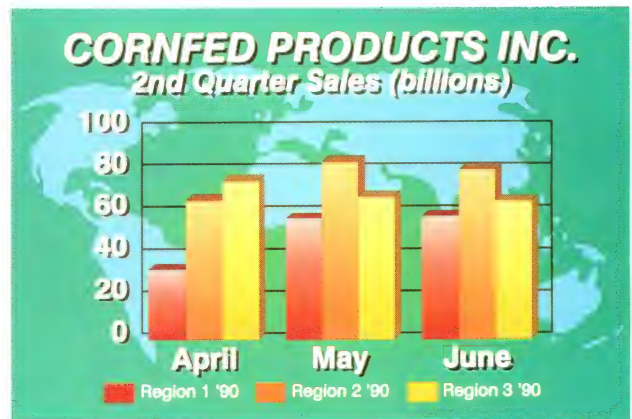
Micrografx's *Charisma* hopes to use the *Windows 3.0* platform as a springboard to overtake *Harvard Graphics 2.3*, neatly integrating its word charts, business charts, desktop presentations, and draw capability. Like *Harvard*, *Charisma* uses templates to speed the creation of word charts and illustrations as well as business charts that include area, bar, column, line, pie, scatter, table, and combination charts in 2-D and 3-D variations. It also includes more than 2200 free clip-art images. You can store your customized charts for future use.

Charisma's illustration ca-

pability includes the usual drawing tools, but you also get Bézier curves and the ability to do gradient fills in more than 16 million colors.

Increasingly, though, the focus in graphics packages is on desktop presentations. *Charisma* includes SlideShow, an electronic utility that provides more than 30 transitional effects between screen shots, 20 predefined word chart templates, and 80 predefined business charts. You can have as many as 30 slides per file and an unlimited number of files in a single presentation, and you can choose either manual or automatic operation. What *Charisma* lacks is the ten-slide branching capability of *Harvard*.

You can use images created



Charisma helps you create good-looking charts and SlideShow desktop presentations fast under the *Windows* interface.

not only with *Charisma* but with Micrografx's *Designer* and *Draw Plus* as well as color or black-and-white PCX, EPS, and TIFF files. And *Charisma* also ships with an enhanced DDE Link Macro to bring in charts and data from *Excel* or to transfer copy among its own modules.

Charisma, which retails for \$495, requires *Windows 3.0* and corresponding hardware. Owners of Micrografx's *Graph Plus* can upgrade for \$100. Micrografx, 1303 E. Arapaho Rd., Richardson, TX 75081; 800/733-3729, 214/234-2410 (fax). —Mike Hogan

Reader service no. 750

The Brick

Ergo's Modular Mail-Order PC

The Brick, Ergo Computing's 386SX-based portable, fits in half a briefcase, but it's designed primarily for the trip between office and home.

The core module has an 8-by-11-inch footprint, stands 3 inches tall, and weighs 8 pounds. It includes a 16-MHz 386SX, 1MB of RAM (expandable to 8MB), a 3½-inch floppy, a 22ms 40MB hard drive, and an extended VGA adapter with 1MB of video memory, supporting 1024 by 768 pixels and 16 colors. For the \$2695 price, you get a keyboard, a desktop-style monochrome VGA monitor, a 2½-pound power supply, a half-card 8/16-bit slot, one parallel and two serial ports, and a 2400-bps modem. Add \$80 for DOS 3.3.

Due by year-end is a paper-white VGA LCD screen for \$895 that will use an expansion slot but will fit in a briefcase with The Brick. A 180-pin connector will let The Brick fit atop an optional docking station planned for late 1990. Optional hard drives include 25ms 100MB and 18ms 200MB models for \$395 and \$995 respectively.

Ergo also sells upscale models, starting with a \$4495 machine with 4MB of RAM, a mouse, a 100MB drive, and a 120MB tape backup. These models come with preconfigured software that includes DOS, *Desqview 386*, *Quattro*, *askSam*, *Tree86*, disk caching and encryption packages, and on-line DOS and system manuals. Ergo Computing Inc., One Intercontinental Way, Peabody, MA 01960; 800/843-2743, 508/535-7512 (fax). —Eric Bender

Reader service no. 743

DesignView 2.0

New-Breed Design Tool for Windows

When *DesignView* appeared, its immaturity was typical of a first release, but it clearly had the potential to fundamentally change the way engineers work. Release 2.0's features reflect a lot of maturing—a virtual reversal of 1.0's shortcomings. That it runs under *Windows 3.0* is icing on the cake.

DesignView was one of the first PC programs to implement dimension-driven variational geometry. The second release takes another leap by adding support for quadratic and cubic splines, rotatable grids, delayed recalculation, mass property synthesis, import of IGES and DXF files, and enhanced mathematics capabilities with inequalities, absolute values, logic functions, a warning function, and integer

conversion. Users can also define their own formulas, which appear as native functions. Mass property synthesis is useful for optimizing geometry based on volume, stress, weight, and cost constraints. For example, *DesignView* could scale a complex 2-D profile of a fluid container to meet a volume constraint.

DesignView retails for \$895. Registered users can upgrade by buying the \$295 annual support policy. Requirements are the same as for *Microsoft Windows*. The *Simulation Module* and an *Applications Library* are available separately for \$295 each. Premise, Inc., 3 Cambridge Ctr., Cambridge, MA 02142; 800/888-7736, 617/225-0322.

—Chris DeLucchi

Reader service no. 754

They Left out Features.... We Left out the **COMMA!!**

The only thing missing...

is the comma in the price. If you look at the chart on the right you will see prices charged by our competition. All but one contain a comma. **DesignCAD 3D** sells for \$399.00. Period. No Comma!

In order to draw the complex pictures shown below it is desirable to have the following 3D features:

- Interactive design with 3D cursor
- Blending of surfaces
- Boolean operations such as add, subtract, and intersection
- Complex extrusions
- Cross sectioning
- Block scaling
- On screen shading
- Shaded output to printers and plotters

All of these competitors left out one or more of these desirable features in their standard package. They didn't forget the most horrible feature - the comma.

DesignCAD 3D offers **ALL** the listed features plus many more!

If **DesignCAD 3D** has the power to create the 3D objects shown below, imagine how it could help with your design project!

DesignCAD 3D sells for \$399. We left out the comma. We didn't think you would mind!

PC MAGAZINE SAYS...

DesignCAD 3D, the latest feature-packed, low-cost CADD package from American Small Business Computers, delivers more bang per buck than any of its low-cost competitors and threatens programs costing ten times as much. For a low-cost, self-contained 3D package... DesignCAD's range of features steals the show."

\$399

AutoCAD rel. 10	\$3,000.00	AutoCAD AEC \$1,000.00 AutoShade \$500.00
CADKEY 3.12	\$3,195.00	Solids \$995.00 IGES translator \$1,995.00
DataCAD with DC Modeler	\$3,990.00	DataCAD Velocity \$2,000.00
DesignCAD 3D ver. 2.0	\$399.00	NO expensive options! IGES Free, Shading Free
MaxxiCAD 1.02	\$1,895.00	N/A
Mega Model	\$995.00	MegaDraw \$195, List \$295, MegaShade \$395
MicroStation PC 3.0	\$3,300.00	Customer Support Libraries \$1,000.00
ModelMate Plus 2.8	\$1,495.00	N/A
VersaCAD Design 5.4	\$2,995.00	N/A

Source: Byte Magazine

BYTE MAGAZINE SAYS...

"At \$399, DesignCAD 3D was the least expensive package we saw, yet it was one of the more powerful. ..Don't be fooled by the remarkably low price, this program can really perform!"

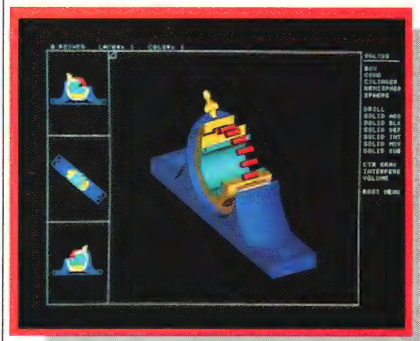
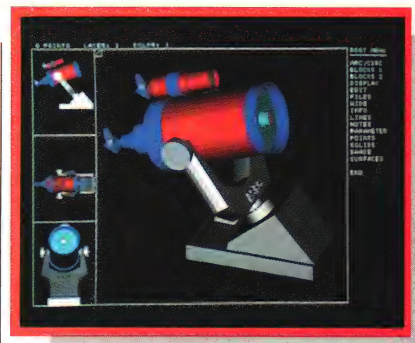
Complete 3-Dimensional design features make it easy for you to construct realistic 3-D models. With full solid-object modeling capabilities you can analyze your drawing to determine the volume, surface area or even center of gravity! **DesignCAD 3-D** even permits you to check for interference between objects! Aeronautical Engineers can now find the center of gravity for a new airplane design with a couple of keystrokes. The Architect can determine the surface area of a roof for decking in a matter of minutes. The Civil Engineer can calculate the volume of a lake or dam in seconds. The Mechanical Engineer will know for sure if certain parts fit together without interference. The uses for **DesignCAD 3-D** are only limited by YOUR imagination!

HOW DO I GET ONE?

DesignCAD 3-D and **DesignCAD 2D** are available from most retail computer stores, or you may order directly from us. If you have questions about which program to purchase please give us a call. All you need to run **DesignCAD 3-D** is an IBM PC or compatible computer with 640 K RAM memory and a hard disk. Both products support most graphics cards, printers, plotters and digitizers. Free Information and a demo disk are available by faxing (918) 825-6359 or telephoning:

1-(918) 825-4844

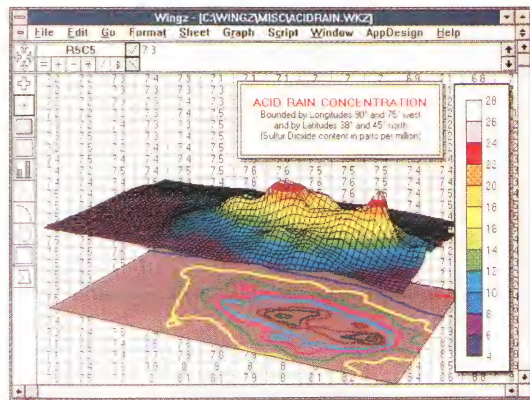
American Small Business Computers • 327 South Mill Street • Pryor, OK 74361 U.S.A.



UPDATE

New Versions of Your Favorite Products

Wingz PC Bonus Pack



Informix packs Windows 3.0 and OS/2 Presentation Manager versions of the Wingz graphic spreadsheet together in the same box.

The Windows 3.0 and the OS/2 Presentation Manager versions of the Wingz graphical spreadsheet are available in a single package for \$499. Both support Dynamic Data Exchange, enabling data to be shared

with other applications supporting these environments. Informix Software, Inc., 4100 Bohannon Dr., Menlo Park, CA 94025; 800/438-7627, 415/926-6593 (fax).

Reader service no. 761

SpinRite II 1.1

Version 1.1 of SpinRite II, the disk diagnostic and maintenance tool, can perform its testing, interleave adjustment, and low-level reformatting tricks on a wider variety of hard disks. Those include disks with track-buffering and sector-translating controllers such as ESDI, SCSI, and IDE subsystems as well as Plus Development Hardcards and laptop drives. Version 1.1 also ships with a utility to automatically park a drive's heads on an unused area when it's not in use. Upgrades to the \$89 product are free to registered users. Gibson Research Corp., 22991 La Cadena, Laguna

Hills, CA 92653; 800/736-0637, 714/830-0300.

Reader service no. 755

Read-It O.C.R. 2.0

Version 2.0 of Read-It O.C.R., Olduvai's popular optical character recognition program, takes full advantage of the graphical user interface and memory management features of Windows 3.0, letting you utilize extended, expanded, and disk memory for optical character recognition. It includes new drivers, new fonts, and the ability to save text in WordPerfect, WordStar, and ASCII format. Upgrades for the \$495 product

are \$49. Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143; 800/822-0772, 305/665-0671 (fax).

Reader service no. 756

The Norton Backup 1.1

Version 1.1 of The Norton Backup operates faster and supports a larger number of operating environments, BIOS combinations, and disk types. The backup-to-floppy program now compresses data into less space. Upgrades to the \$149 Norton Backup are free to registered users of 1.0. Peter Norton Computing, 100 Wilshire Blvd., 9th floor, Santa Monica, CA 90401-1104; 800/626-8847 California, 800/441-7234 (U.S.).

Reader service no. 757

Professional Write 2.2

Software Publishing has integrated the grammar checker Grammatik IV into Professional Write 2.2, its executive word processor. The package also adds support for more printers and font cartridges, longer documents, and auto-hyphenation. The cost of upgrades to this \$249 word processor vary, depending on your previous version and when you bought it. Software Publishing Corp., 1901 Landings Dr., Mountain View, CA 94039-7210; 415/962-8910.

Reader service no. 758

Project Bridge

Applied Business Technology offers a project-estimating tool for use with its high-end project management software, Project Workbench. Targeted

at MIS software engineers, Project Bridge lets users integrate top-down and bottom-up estimating with the other decision criteria. Project Bridge is a \$5000 add-on to the \$1275 Project Workbench. Applied Business Technology Corp., 361 Broadway, New York, NY 10013; 212/219-8945.

Reader service no. 759

Microsoft Mouse/Windows 3.0

The 400 Series Microsoft Mouse is now available in a bundle with Windows 3.0 for \$225, a \$49 saving over the \$274 price of both products when sold separately. The Mouse is available in both bus and serial versions. Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399; 206/882-8080.

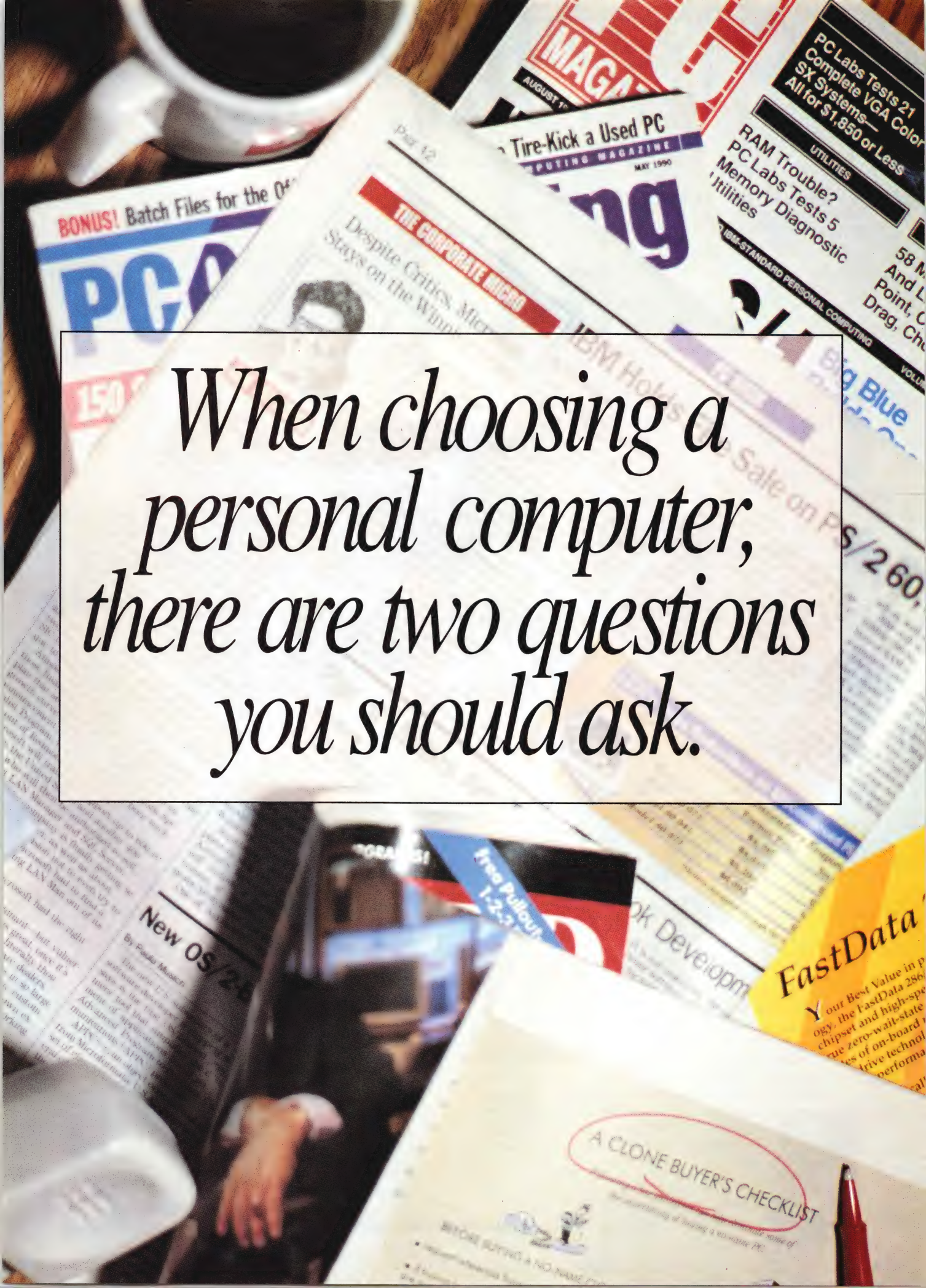
Reader service no. 760

WordPerfect Office Editor 3.0

The program and macro editors in WordPerfect Office 3.0 are now available as a separate product called WordPerfect Office Editor 3.0. The \$45 package includes enhanced functions such as definable tables, editing in Reveal Codes, multiple-document editing, and support for the macros of WordPerfect 5.0, 5.1, PlanPerfect 5.0, and Shell 3.0. WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057; 800/321-4566.

Reader service no. 763

For more information about any product, contact the manufacturer or circle the number on the reader service card. ☺

The background is a collage of various computer-related items. At the top left, a white mug filled with dark coffee sits on a wooden surface. Below it, several magazines are visible. One is 'PC' with a 'BONUS! Batch Files for the Office' headline. Another is 'MAGAZINE' with a 'Tire-Kick a Used PC' headline. A third is 'THE CORPORATE MICRO' with a headline 'Despite Critics, Micro Stays on the Winning'. To the right, a document titled 'PC Labs Tests 21 Complete VGA Color SX Systems—All for \$1,850 or Less' is visible. Below that, another document says 'RAM Trouble? PC Labs Tests 5 Memory Diagnostic Utilities'. Further down, a document mentions 'IBM-STANDARD PERSONAL COMPUTING'. At the bottom, a document titled 'A CLONE BUYER'S CHECKLIST' is partially visible, with a red pen resting on it. The text 'When choosing a personal computer, there are two questions you should ask.' is overlaid in a large, elegant, black script font, enclosed in a thin black rectangular border.

*When choosing a
personal computer,
there are two questions
you should ask.*

Why FastData?

A personal computer is a large investment; before you choose, we want you to know what to expect when you purchase a FastData personal computer from FastMicro.

Superior Design.

You get more out of your FastData personal computer because we put more into it. We've been building PC's longer than most of the competition and we put that experience to work for you. We use proven designs that pass our stringent performance requirements and compatibility standards so it will be sure to pass yours.

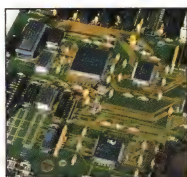


Better Components.

The whole is only as good as the sum of its parts; and FastData systems use some of the best parts in the industry. For example, each FastData system ships with a Keytronics keyboard; Keytronics costs a lot more than others, but the quality is worth it.

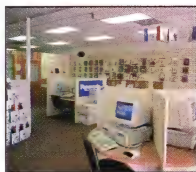


Our systems use exclusively Toshiba floppy drives, the industry leader. Standard equipment includes other quality components from Western Digital, Phoenix, Chips & Technologies, just to name a few.



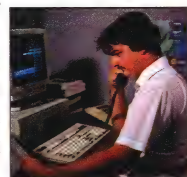
Selection.

Our face to face retail background has made us never forget that the customer comes first and that a personal computer is just part of a customer's overall needs. That's why FastMicro offers thousands of hardware and software products to enhance your new personal computer. In fact, our competition will probably tell you to call us when you need something to run on their personal computer.



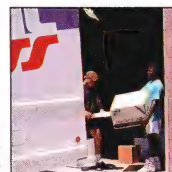
Full Support.

Our team is standing by and ready to make your FastData computer perform to its greatest potential for you. When you buy a FastData computer, you're covered by Toll-Free technical support for life. And since we sell more software than other computer companies, we are uniquely qualified to give the proper support the customer deserves.



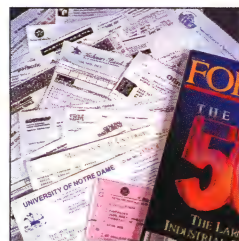
Service.

All FastData personal computers come with a full one year warranty, but that's just the start. In the unlikely event your computer is down, it is our goal to get back up and working as quickly as possible - and we back it up with action. Call us toll-free and we'll work with you to determine the problem; if a part breaks, we will send you the replacement part through our FastSHIP program - before the broken part is returned to us - and we'll pay the freight both ways. If our phone support or FastSHIP program can't solve your problem, we will service it on-site to most U.S. locations or replace your computer at no charge. Now that's service.



Risk Free.

We pass the test for the choosiest of customers; in fact, FastMicro sells to over half of the Fortune 500 and Universities in 47 states (we're working on the rest). These people buy for a living and rely on us, you can too. You can do more than take our word on it - go ahead and purchase any FastData brand product from FastMicro and if you are not thoroughly satisfied after 30 days, you can return it for a full refund of the purchase price.



Circle 100 on reader service card

Which FastData?



\$1599 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and want to rip through their favorite programs, like Lotus and WordPerfect at blinding speeds. This machine is ideal to run the latest memory demanding and graphic software, right out of the box. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit color VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel 80386-SX processor. (20mhz optional)
- ✓ 2 megabytes of zero wait-state RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. (Second drive add \$79)
- ✓ Standard chassis with keylock, speed and reset buttons. (Optional chassis add \$50)
- ✓ Five available drive bays.
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, and two serial ports. (Game port included on color systems)
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 available.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Phoenix BIOS.
- ✓ Compatible with DOS, OS/2, Windows, Xenix and Novell.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	\$1,269	\$1,369	\$1,519	\$1,619
VGA Color	\$1,599	\$1,699	\$1,849	\$1,949
VGA 1024	\$1,749	\$1,849	\$1,999	\$2,099



FastData 386/25 \$2299

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand the most from a computer. Whether running as a network fileserver, CAD or graphics station, or power-user's workhorse, the FastData 386/25 handily meets the challenge. It comes configured with a whopping four megabytes of fast RAM, a superfast 22 millisecond 65 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 512K VGA board. Plus, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere. When evaluating 386-DX workstations, why even consider anything else?

Standard Features

- ✓ 25mhz Intel 80386-DX processor. (33mhz optional)
- ✓ 4 megabytes of zero wait-state RAM.
- ✓ 65 mb 22ms RLL hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. (Second drive add \$79)
- ✓ Standard chassis with keylock, speed and reset buttons.
- ✓ Five available drive bays.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, and two serial ports. (Game port included on color systems)
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 available.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Phoenix BIOS.
- ✓ Compatible with DOS, OS/2, Windows, Xenix and Novell.
- ✓ FCC Class B approved.

System Price	65mb	80mb	100mb	200mb
Monochrome	\$1,819	\$1,969	\$2,069	\$2,469
VGA Color	\$2,149	\$2,299	\$2,399	\$2,799
VGA 1024	\$2,299	\$2,449	\$2,549	\$2,949

FASTMICRO

For information or to order call:

1-800-441-FAST

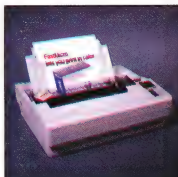
Hardware

PRINTERS

ALPS Allegro 500	309
Citizen	
200GX	189
GSX140	285

Citizen GSX140

Loaded with features, this 24 pin printer is a hot seller! It comes with 6 resident fonts, paper parking, and Epson & IBM printing modes. It does up to 192 CPS and has a unique LCD control panel that lets you set everything without DIP switches. Upgrade to color anytime for just \$39.



Diconix 150 Plus	329
Fujitsu	
DL3400	419
NEC	
P2200XE	259
P6200	479
P6300	639
LC290	2495

Okidata	
182 Turbo	225
320 (IBM)	335
390 (IBM)	469
393 (IBM)	999

Panasonic	
KXP1180	175
KXP1191	239
KXP1124	299
KXP1624	429
KXP4420 Laser	995
KXP4450/4455 Lasers	Call

Seiko Smart Label Printer	179
---------------------------------	-----

Star	
NX1000-II	167
NX2410	279
XB2410 / 2415	429 / 569

Texas Instruments Microlaser PS	1839
---------------------------------------	------

MONITORS

Mitsubishi	
1410 EGA	325
Diamond Scan 1381	479

NEC	
Multisync 2a	469
Multisync GS 2a	205
Multisync 3d	629
Multisync 4d	1095

Panasonic	
C1381 VGA 1024x768 new!	439



Panasonic Super VGA

\$439 The Panasonic C1381 will do VGA up to 1024x768 interlaced resolution. It has a dot pitch of .28 and is compatible with all standard VGA cards. Includes swivel base and VGA cable.

Princeton	
Max15	237
Ultrasync 12"	479
Ultrasync 14" (now 1024x768)	509
Ultra 16	835

Samsung	
Call	

Seiko	
CM1440	519
CM1450	659

Sony 1304 Multiscan	669
---------------------------	-----

Zenith 1492	Call
-------------------	------

BOARDS

ATI	
2400 ETC Internal	147
2400 ETC External	187
VGA Wonder 256	209
VGA Wonder 512	239
Brown Wagh Sound Blaster	157

Everex	
1200B Int Modem	55
2400B Int Modem	105
EGA 480 Card	79
RAM3000 16 bit RAM card	75
RAM8000 16 bit RAM card	169

Hercules Graphic Card + ...	169
Intel	
8087-2	115
287XL New!	209
387-DX20	369
387-SX16	319

Logitech ScanMan Plus	165
-----------------------------	-----



ScanMan Plus by Logitech \$165

The perfect companion to popular desktop publishing software, the ScanMan Plus comes with PaintShow Plus editing software. It scans from 100 to 400 DPI and up to four inches wide. Add just \$139, and CatchWord OCR software will let your ScanMan actually read text!

Orchid	
ProDesigner	229
ProDesigner II 512/1mb	299/349
Tiny Turbo 286	207
Tiny Turbo Xtra	267

Paradise	
Basic VGA - 8 bit	109
VGA 1024 256K	175
VGA 1024 512K	229

Paradise VGA 1024 \$175

The 16-bit VGA 1024 comes standard with 256K and is expandable to 512K & will do up to 256 colors. It does up to 1024x768 interlaced, is compatible with EGA & CGA software, & comes with drivers for most major software. Free Indiana Jones 256 color game included (while supplies last).



Practical Peripherals	
1200B Int Modem	59
2400B Int Modem	125
2400B Int with MNP	169

Prometheus	
Promodem 1200B Internal	48
Promodem 2400B Internal	98
Promodem 2400B Mini-Pocket	119
Promodem 2400G External	149

The Complete PC	
Answering Machine	239
Fax 4800	229
Hand Scanner 400	139

Tiara Networking	
Lancard/A PC (Arcnet)	79
Lancard/E Star 8 (Ethernet)	139
Lancard/E AT (16 bit Ethernet)	249

USRobotics	
2400 Baud Internal	119
2400 Baud External	149
Courier HST 14,400 Ext.	579
Courier HST 14,400 Int.	539

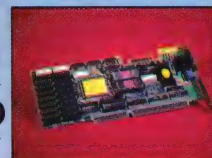
BOARDS, continued

Video 7	
VGA 1024i 256K	209
VGA 1024i 512K	237
Vega VGA	149
V-RAM VGA 512K	355
Western Digital Controllers	
WD1006V-MM2 MFM AT 1:1	99
WD1006V-SR2 RRL AT 1:1	129
WE1007V-SE2 ESDI AT 1:1	199

FastData Products

FastData 16 Bit VGA

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768. Its expandable to 512K and comes with a 30 day money-back guarantee.



FastData CGA Card	35
FastData MGP Card	35



FastData 2400 Baud Internal Modem

\$69 The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with BitCom software.

Parallel/Dual Serial/Game Card	35
XT 1.44 Dual Floppy Controller	35

FastData Monitors

Your best value, we have a complete line made for us by leading manufacturers like Samsung & Hyundai. Like all FastData products, you have a full 30 day money back guarantee. Shown is the VGA Color for \$319.



FastData Monitors	
12" Amber Monochrome	79
14" Amber Monochrome	119
14" White Monochrome	119
14" White VGA Monochrome	129
14" CGA Color .52 dot pitch	199
14" VGA Color .31 dot pitch	319
14" Super VGA 1024 x 768i .28 dp.	399

DISK DRIVES

Colorado 40-120mb Int. Tape	249
Conner	
Call	
Mitsubishi	
60MB AT RLL MR535	269



Mitsubishi 65mb AT Kit

\$349 RLL encoding, 1:1 controller, and 22ms access time make this a very fast performer. The perfect upgrade for your 286 or 386 compatible, this kit comes with everything you need including controller and cables.

Seagate	
20MB XT Kit #225	239
30MB XT Kit #238	249
40MB AT #251-1	299

Toshiba	
360K Floppy	69
720K 3.5" Floppy	69
1.2MB 5.25" Floppy	79
1.44MB 3.5" Floppy	79

Toshiba 1.44mb Floppy Drive \$79

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add \$5.



POWER PROTECTION

American Power Conversion	
200DL UPS - XT Size	147
450AT UPS - 386 Size	317

Curtis	
Command Center	85
Ruby Plus	59

Datashield	
CPS-60 - 6 outlet surge	19
S-85 - 6 outlet surge EMI/RFI protection	49
S-100 - adds modem protection	57

FastData 286/12 \$899

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Keytronic keyboard. And since it's a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drives
- ✓ Standard chassis (shown with optional chassis - \$50)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Phoenix BIOS.
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, and two serial ports.
- ✓ Keytronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ Full documentation.
- ✓ FCC Class B approved.



System Price	40mb	65mb	80mb	100mb
Monochrome	\$899	\$999	\$1,149	\$1,249
VGA Color	\$1,229	\$1,329	\$1,479	\$1,579
VGA 1024	\$1,379	\$1,479	\$1,629	\$1,729

Software

DATABASE

Clarion Personal Developer	45
Clarion Professional Developer	Call
Clipper 5.0	459
DataEase	459
dBase III+	419



FoxPro \$417

The fastest, most powerful, Dbase language relational database available today. Includes windowing, desk accessories, memo fields, and report writer. The trace window lets you watch while FoxPro debugs your programs. Add a mouse and you can run it with point and click ease.

dBase IV	479
dBXL Diamond	129
Foxbase Plus	177
FoxPro	417
Paradox	419
Q & A	214
RapidFile	99
Rbase for DOS	447
Reflex	159

DESKTOP PUBLISHING & GRAPHICS

Autosketch	83
Corel Draw	309

Corel Draw \$309

Winner of all the top awards, Corel Draw gives you more for your money. It supports the new Windows & includes incredible drawing and editing tools. Includes over 100 typefaces and 300 pieces of clipart. CorelTrace converts scanned art to smooth vector images in seconds. This is the most complete illustration package we've ever seen!



DrawPerfect	265
Freelance Plus	307
GEM Desktop Pub.	159
Generic Cadd Level 2 Starter Kit	109
Generic Cadd Level 3	199
Harvard Graphics	275
Pagemaker	479
PC Paintbrush IV Plus	109
Perspective Jr.	69
PFS:First Publisher	89
Publisher's Paintbrush	149



Publish It! \$104

The top-rated, entry-level desktop publishing software runs well even on an XT. Includes the GEM/3 user interface with easy pull down menus and multiple size page views. Supports most popular printers and has a variety of built-in fonts and sizes.

Publish It!	104
Ventura Publisher Gold	519

FINANCIAL

Bedford Integrated Acct.	145
DAC Accounting 4.0	79
DAC Bonus Pack 4.0	157
Dollars & Sense	Call
Managing Your Money	113

Peachtree Complete III \$139

A super value! Includes General Ledger, Accts. Payable, Accts. Receivable/Invoicing, Purchase Order, Payroll, Inventory, Job Cost, Fixed Assets and more. Loaded with over 450 reports, automatic backup and helpful manuals.



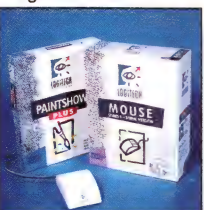
Peachtree Complete III	139
Peachtree with Data Query	209
Quicken	35

INTEGRATED

First Choice	105
SmartWare II	Call
Windows 3.0	89
Works	89

MICE

Keytronics Professional	59
Logitech HiRes C9 Serial	65



Logitech C9 Serial Mouse \$65

Our best-selling mouse is top rated also. Comes with software to adjust the resolution just the way you want it and includes driver software and Pop-Up-Dos to make your computer hum at your fingertips. For PaintShow, add \$15.

Logitech HiRes C9 Bus	76
Logitech Trackman Serial	75
Microsoft Serial or Bus w/ paint	95
Microsoft with Windows 3.0	147
PC Mouse II Serial or Bus	79

PROGRAMMING

Macro Assembler	89
Turbo C++	Call
Turbo Pascal	90
Quick Basic	60
Quick C	60
Quick Pascal	60

SPREADSHEETS

Allways	106
Excel	Call
Lotus 1-2-3 version 2.2	325
Lotus 1-2-3 version 3.0	Call
Lucid 3-D	53
Quattro Pro (call for details)	89

Lotus 1-2-3 Version 2.2 \$325

The standard for spreadsheets, Lotus 1-2-3 version 2.2 is faster and more powerful than previous versions that made it famous. Includes add-in manager and more functions for greater flexibility. Also comes with Allways for great presentations made easy.



WORD PROCESSORS

GEM First Word Plus	52
Grammatik IV	49
Multimate 4.0	267
Professional Write	149
Rightwriter	45
Sprint	117
Word	209
Word for Windows	309

WordPerfect 5.1

What can we say? WordPerfect is the #1 rated word processor

and the top selling software in the U.S.A. Its got almost every feature imaginable and yet it is easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!

Word Perfect 5.1	239
Word Perfect Add'l Station	153
Word Perfect Library	67
WordStar Professional	Call



WINDOWS SOFTWARE

Adobe Illustrator (GR)	279
Adobe Type Manager (UT)	59
Ami (WP)	115
Ami Professional (WP)	287
Asymetrix Toolbook	279
Corel Draw (GR)	309
DBfast/Windows (DB)	239
Excel (SS)	299
Form Publisher (DP)	139
Grammatik IV for Windows (WP)	49
PC Paintbrush for Windows (GR)	77
Pagemaker (DP)	479

Windows 3.0

The graphical user interface everyone is talking about! \$89

Turns your 286 or above with 640K or more of memory into a powerful multitasking workstation that runs even non-Windows applications. Plus, if you buy Windows now from FastMicro, we'll throw in 10 of the best Windows shareware programs.

Publisher's Powerpak for Windows (DP)	45
Micrographix	Call
Microsoft Mouse w/ Windows 3.0	147
Windows 3.0	89
WingZ for the PC (SS)	309
Word for Windows (WP)	309



Utility Software

Control Room	69
CoreFast	60
Carbon Copy Plus	109
Desqview	68
Desqview 386	115



DESQview 386

Bring multitasking to your 386. Includes DESQview, the award-winning multitasking environment. Also includes QEMM386, the memory manager for 386 machines that makes DESQview scream and can remap your TSR programs and transform your extended memory into expanded (EMS 4.0) memory. Includes Manifest Memory Analyzer as an added

Direct Access	54
Fastback Plus	109
FormTool Gold	52

FormTool Gold

The fastest, easiest way to create any form on your PC! Includes forms management, WYSIWYG preview, and intelligent line drawing. Has fill-in and merge capabilities and supports hundreds of printers. Includes over 100 pre-designed forms you can use or customize.

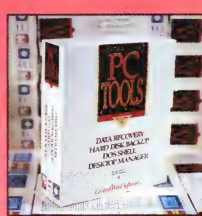


Formfiller	85
Headroom	59
Laplink III	85
MS-Dos 3.3	59
MS-Dos 4.01	59

Mace Utilities 1990	85
Norton Advanced	Call
PC Anywhere III	59
PC Tools Deluxe 6.0	79

PC Tools Deluxe \$79

Get the collection of utilities that's won every award we've ever heard of! Includes Dos shell, desktop manager, disk cache, and data communications. Also includes hard drive utilities such as DiskFix, undelete, unfomat, backup and recovery. It also has Fax support, a special version of LapLink, and even more!



ProComm Plus	52
Prodigy	25
QEMM 386	52
QRAM	43



\$52 ProComm Plus

Brings unequalled power to your modem! Includes 16 popular terminal emulations, 12 error-correction file transfer protocols, and a powerful script language. And it's easy to use and comes with an easy to understand manual and context sensitive help.

SideKick Plus	119
Sideways	37
Super PC Kwik	43
XTree Pro Gold	75

FAST MICRO

FOR INFORMATION ON PRODUCTS NOT LISTED ABOVE, CALL TOLL-FREE: 1-800-441-3278



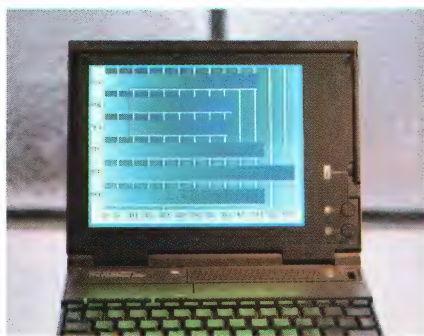
TERMS: No Charge for Visa or MasterCard. Shipping & handling charge: 3% (Min. \$4). Product warranties, offers & claims are handled by the manufacturer*. DOA's repaired or replaced at our option. Unopened returns get full refund. All opened returns are subject to 15% restocking fee*. Call for return authorization (RA) number first. No returns on used items*. Shipping is not refundable. Sorry, no COD's. Personal/company checks delay shipping. Compatibility is not guaranteed*. APO addresses add \$15 per box. Prices/availability subject to change. Purchase orders accepted from approved corporations only. AZ orders add 6.7% tax.

* Excludes FastData products.
Mailing Address:
 3655 E. LaSalle St., Phoenix, AZ 85040
To place orders call: 800-441-3278
For customer service call: 602-437-0300

LAPTOPS WITH THE LIGHT STUFF

The days of the desktop PC may be numbered. These lean, mean systems have roomy hard disks and plenty of CPU power—but they're still small and light enough to fit in a briefcase

Michael Goodwin



Notebook computers are the machines for which many of us have put off buying laptops.

What is a notebook? *PC World* started out looking for hard disk laptops you could stuff into your briefcase and transport all the way to New Orleans without crushing your sandwich. In the end, because we know users don't want to trade features for portability, we sharpened our focus to lightweight laptops with hard disks, modems, full QWERTY keyboards, and either a built-in floppy drive or—my preference—an outboard floppy (see the

sidebar "Floppies—Love 'Em and Leave 'Em").

What does "lightweight" mean? We drew the line at 10 pounds traveling weight (including PC, battery, modem, and AC recharger/power supply).

Seven laptops met our tough criteria—three 8086-based machines, and four that use an 80286 CPU. Two brand-new 286-based machines took Best Buy honors: Sharp's PC-6220 and Texas Instruments' TravelMate 2000. These incredible PCs combine mind-boggling portability with unheard-of battery life.



Texas Instruments' Travel-Mate 2000 (far left) and Sharp's PC-6220 (left) share great portability, long battery life, and a VGA display.

Buying Light Is Buying Right

Whether you buy an 8086- or an 80286-based notebook, the key buying issues are portability, battery life, screen, keyboard, and price. If you plan to do more than word processing, telecommunications, or light spreadsheet work, then CPU type, RAM capacity, performance, and service and support will affect your buying decision too (see the sidebar "Buying Smart").

To help you make cost comparisons more easily, all the notebooks in this roundup have been priced in a

standard *PC World* configuration: 1MB of RAM, a 20MB hard drive, either a built-in or an outboard floppy, a 2400-bps modem, and DOS.

8086 NOTEBOOKS

Compaq LTE

Until Compaq released this middleweight notebook and its faster brother (the LTE/286) last year, the laptop



Toshiba's T1200XE (left) and T1000XE (right) combine great portability, excellent screens and keyboards, and extremely low prices. Battery life is less impressive.

story was a tale of two trade-offs: If you wanted low weight you could forget about a hard disk and long battery life. These miraculous machines changed all that.

The LTE still delivers outstanding battery life and the fastest performance of any notebook in its class, and despite a built-in floppy drive it's quite compact. However, in other respects it's been surpassed by newer machines: It's relatively heavy (8.6 pounds traveling weight), the keyboard is awkward, the display is small and wide, and the LTE's street price (\$2525 in the *PC World* configuration) is the highest in its class.

The LTE may be heavy, but its size is about average. In short, while this notebook will fit into your briefcase easily, your sandwich may suffer. On the other hand, its battery life is extraordinary. Our informal tests showed nearly 5 hours with normal use.

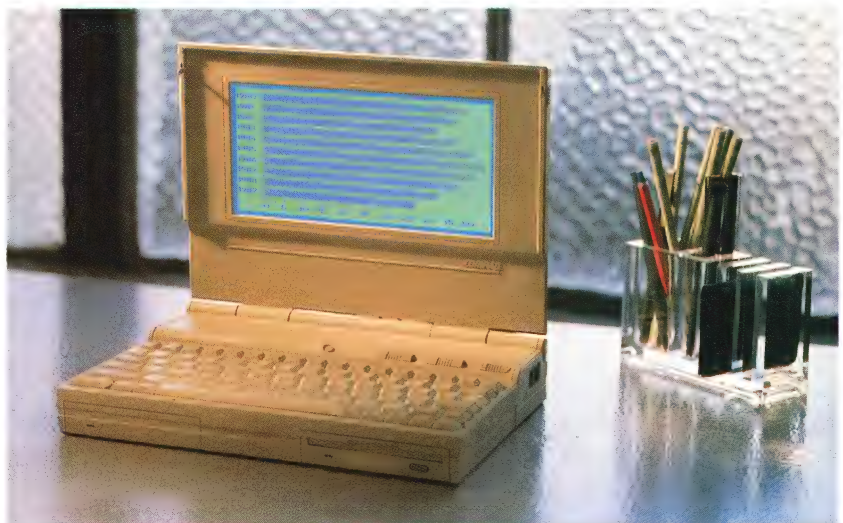
The LTE has two Achilles' heels: its screen and its keyboard. The screen is quite small, and its 2:1 width-to-height aspect ratio turns circles into eggs and distorts text. The keyboard's dedicated cursor keys fall in an L, instead of the inverted T your fingers expect. <Page Up> and <Page Down> are simulated, as are quite a few other keys. Worst of all, unless you hit the keys hard they don't always make contact.

The machine's performance is the best of any 8086-based notebook we tested, taking top place in all four speed

tests.

The LTE's RAM capacity is a cramped 1MB, the lowest count in the roundup. And while most of its design is well thought out, placing the AC power jack (which you need every day) behind a nail-breaking snap-cover at the rear of the machine was a poor decision.

The LTE's excellent battery life means you can work comparatively long hours away from the power plug, and its fleet performance is the best of the inherently poky 8086 CPUs. However, its high price, overly wide screen, poor keyboard, and 8.6-pound weight make it much less competitive than some of the newer kids on the block—and it's still about twice as slow as an 80286.



Compaq's LTE is the fastest 8086-based notebook we tested, and it boasts an outstanding battery life of 5 hours in normal use. Unfortunately, it's relatively heavy.

Toshiba T1000XE

Toshiba's 7.5-pound T1000XE is a perfect example of the dictum less is more—as long as the *less* refers to pounds, inches, and dollars. One of the lightest and least expensive notebooks reviewed (it's only \$2348 on the street, in the standard *PC World* configuration), it boasts a terrific screen, a great keyboard, average performance, and a handy outboard floppy drive.

Trade-offs? Though light, the T1000XE is actually a bit large. Moreover, battery life is unimpressive: Under normal use, you'll start seeing low-battery warnings before 2 hours elapse. On the bright side, there's a handy pop-up battery-charge indicator.

The T1000XE's screen is large, bright, and easy to read, and it boasts an aspect ratio that's close to that of a standard CRT. Double-scan CGA gives you text at 640 by 400 pixels (slightly better than EGA resolution), but unless your program supports AT&T's or Toshiba's special 400-line modes, graphics are 200-line CGA. The keyboard is better, with dedicated cursor keys in the standard inverted T, plus dedicated page and function keys. The numeric keypad is simulated, as are a few other keys. Key touch is excellent: full travel, soft landing, and positive key contact.

FEATURES EVALUATION

Desktop Features in a Briefcase-Sized Package

Portability (weight and size) and battery life are the critical features in these notebook laptops, and in these categories the machines from Texas Instruments and Sharp score high honors. However, when you look at keyboard ergonomics and street price, Toshiba's T1200XE shines.

	8086 Notebooks			80286 Notebooks			
	Compaq LTE	Toshiba T1000XE	Zenith Data Systems Minisport HD	Compaq LTE/286 Model 20	Sharp PC-6220	Texas Instruments TravelMate 2000	Toshiba T1200XE
Standard features							
Street price ¹	\$2525	\$2348	\$2255	\$3675	\$3653 ²	\$3653 ²	\$3238
List price	\$3617	\$3297	\$3198	\$4767	\$5046 ²	\$5046 ²	\$4348
CPU	80C86	80C86	80C88	80C286	80C286	80C286	80C286
CPU speed	9.54 MHz	9.54 MHz	10 MHz	12 MHz	12 MHz	12 MHz	12 MHz
Coprocessor type and speed	n/a	n/a	n/a	80C287-12	80C287-12	80C287-12	n/a
RAM capacity	1MB	3MB	2MB	2.6MB	3MB	3MB	5MB
Portability							
Traveling weight (pounds) ³	8.6	7.5	7.5	8.6	7.5	7.5	9.75
Size (inches)	1.9 x 8.5 x 11	1.8 x 10 x 12.2	1.3 x 9.8 x 12.4	1.9 x 8.5 x 11	1.4 x 10.75 x 11	1.4 x 10.75 x 11	2 x 11 x 12.2
Volume (cubic inches)	178	220	158	178	166	166	268
Built-in floppy drive	●	○	○	●	●	●	●
Battery							
Battery life (hours/minutes)							
Power-saving enabled/disabled	6:40/4:55	3:18/1:54	2:20/2:05	6:50/4:30	11:00/5:05	11:00/5:05	2:53/1:59
Charger indicates charge-in-progress	●	●	○	●	●	●	●
Screen							
Size (square inches)	29	38	26	29	46	46	39
Aspect ratio	2:1	1.57:1	2.6:1	2:1	1.3:1	1.3:1	1.55:1
Display type	CGA	CGA	CGA	CGA	VGA	VGA	CGA
Shades of gray ⁴	4	4	4	4	16	16	4
Keyboard							
Dedicated cursor keys	●	●	●	●	●	●	●
Cursor keys in standard inverted T	○	●	●	○	●	●	●
Dedicated page control keys	○	●	○	○	●	●	●
Dedicated function keys	● ⁵	●	● ⁵	● ⁵	● ⁵	● ⁵	●
Service and support							
Warranty period (months)	12	12	12	12	12	12	12
Free on-site service	● ⁶	● ⁶	○	● ⁶	● ⁶	●	● ⁶
Toll-free tech support	● ⁶	●	● ⁶	● ⁶	●	●	●
Daily support (hours)	● ⁶	10	● ⁶	● ⁶	8	9	10
BBS	● ⁶	●	● ⁶	● ⁶	●	●	●

¹ Standard configuration includes 1MB RAM, 2400-bps modem, 20MB hard disk, floppy drive (built-in or outboard), and DOS.

² Estimated; includes add-on "slice" battery.

³ Includes PC, battery, modem, and AC power/charger.

⁴ Including black and white.

⁵ <F1> through <F10> dedicated; <F11> and <F12> simulated.

⁶ At dealer's discretion.

BEST
BUY

BUYING SMART

A notebook PC may look like a laptop, but in reality it's a new product category—with its own buying issues.

Portability For notebooks even more than other laptops, small size and low traveling weight are all-important. At 10 pounds and under, including the PC, the battery, and the AC charger, each of these machines compares excellently with the overall laptop field.

Everyone needs a floppy drive. Three of these notebooks have them built-in, but when portability is primary, I prefer outboard floppies you can leave at home.

Battery Life As the saying goes, "There ain't no such thing as a free lunch." Low weight means light batteries means relatively short battery life. You have a right to demand at least 3 hours of battery life. All these machines let you exchange batteries, so you won't have to stop working if the one in the machine runs low.

Screen All these systems have bright, backlit displays, so the critical issues are display type (VGA is desirable, but only two of the seven have it), size (the bigger the better), and aspect ratio

(wide "CinemaScope" screens distort graphics and make text hard to read). Standard displays are usually 1.2:1. Anything wider than 1.6:1 is too wide.

Keyboard The most important keyboard features are dedicated cursor keys (in the familiar inverted T), plus dedicated page and function keys; if these are missing you'll find it harder to switch back and forth between your desktop and the notebook. Reliable key contact, key travel (the distance the key moves before it bottoms out), and "soft landing" (the smoothness with which the springs under the keys cushion the landing) are critical, too.

Price We base our cost comparisons on *street price*. For every machine, we call as many as five PC dealers in each of eight cities (Boston, New York City, Atlanta, Chicago, Dallas, Houston, San Francisco, and Los Angeles) and ask for a quote in the standard *PC World* configuration. Results are averaged.

Neither the Sharp nor the TI was available in stores as we went to press, so we had to estimate street prices (see reviews for details).

RAM Capacity We consider a

2.6MB memory ceiling a minimum requirement. That lets you install a large RAM disk, plenty of expanded memory, and the like. Not everyone will want to run Windows 2.0 on a notebook, but if you can't live without Microsoft's GUI, 4MB of RAM is none too much.

Performance For most notebook users, performance is not nearly as critical as portability. However, if your roadwork requires high-speed computing, you'll want to buy one of the 286-based systems—they all perform at roughly the same level.

Service and Support All the companies in this roundup handle service and support through dealers, which means features and quality vary from one location to another. To find out how they compare, we made a series of blind calls to dealers around the country.

Most dealers offered 12 months of warranty coverage and an average of 9 hours of daily tech support. On-site service was generally available, but only as an extra-cost option. Weekend support was rare, but most dealers had a fax for technical inquiries. Exceptions are discussed in individual reviews. —M. G.

Toshiba prefers its customers to get service and support through dealers, but it also offers a toll-free tech support line. We called three times and averaged 11 minutes on hold before we got an answer.

With a generous 3MB RAM ceiling, the T1000XE provides plenty of overhead for placing a big 1-2-3 spreadsheet in expanded memory, or a RAM disk in extended. (A RAM disk is a great way to save battery life by minimizing hard disk access.) Except for a stiff latch that makes it hard to open the case, design is excellent.

The T1000's short battery life is a shame, especially because its light

weight, attractive screen, and outstanding keyboard make it one of the most portable and easy-to-use notebooks in the roundup. However, if you don't mind carrying a few charged batteries and can live without 286 performance, this machine still makes a tempting package.

Zenith Data Systems MinisPort HD

At \$2255 on the street (in the *PC World* configuration, with an outboard floppy drive), the MinisPort HD boasts the lowest price of any machine in the roundup. It's also the smallest, and it

ties for lowest weight. Unfortunately, not all the news is good: The HD's keyboard and battery life could be better; it's the slowest machine we tested, and its small screen is the worst in the roundup.

This system's portability numbers are impressive. Its weight (7.5 pounds) and size are both excellent. But its 2-hour battery life is only average, and it's the only machine in the roundup to lack a charge-in-progress indicator; without it, there's no way to find out if the battery is fully charged.

The HD's screen is bright and crisp and displays four shades of gray. But it's also the tiniest in the roundup, and so

PC WORLD TEST REPORT

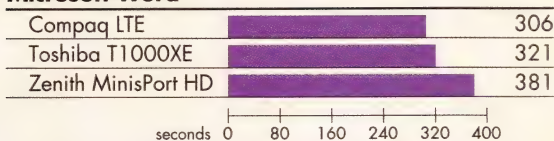
Weight, Not Speed, Distinguishes Notebook PCs

No surprise: 286-based notebooks run rings around 8086-based machines. Within the 8086 category, Compaq's LTE takes top honors. The 286s score so closely that we have to declare a dead heat.

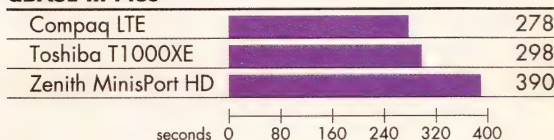
■ Best Buy

8086 Systems

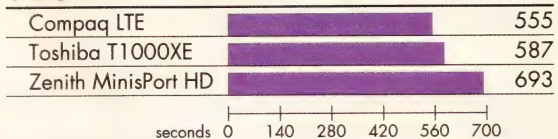
Microsoft Word



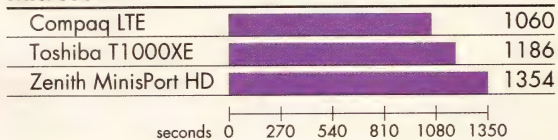
dBASE III Plus



1-2-3

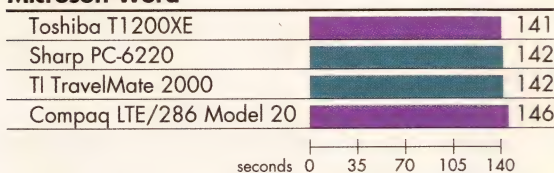


Microsoft C

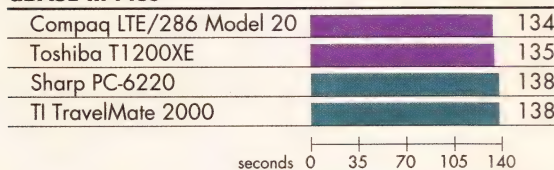


80286 Systems

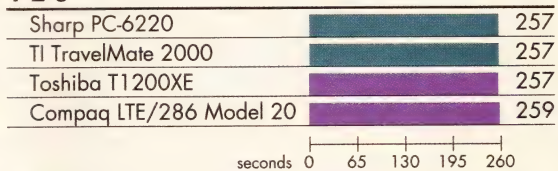
Microsoft Word



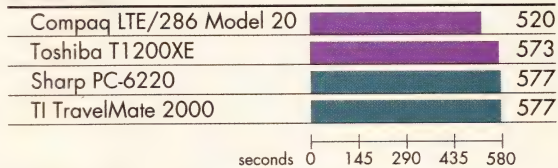
dBASE III Plus



1-2-3



Microsoft C



Methodology

All the computer systems were tested with a 256K disk cache. The 8086 machines had an expanded-memory disk cache; the 80286 machines had an extended-memory disk cache. Systems were tested with the following amounts of RAM: Compaq LTE, Sharp PC-6220, Texas Instruments TravelMate 2000, Toshiba T1200XE, and Zenith MinisPort HD, 1MB; Compaq LTE/286 Model 20, 2.5MB; and Toshiba T1000XE, 3MB. Every computer was tested with the vendor's version of DOS, and each system had a 20MB hard disk.

Microsoft Word 4.0

A Microsoft Word macro loads a 35-page, 140-paragraph document and performs search-and-replace and spell-checking operations. The first page of the document is then printed. Although the results of the benchmark depend primarily on processor and memory access speeds, display adapter and hard disk speeds are also contributing factors.

1-2-3 2.01

In this benchmark, a 1-2-3 macro executes a series of recalculations using five different formulas within a 75-by-75-cell matrix. Because there are few screen updates and no disk access is required, the results depend almost entirely on processor and memory access speeds.

dBASE III Plus 1.1

The dBASE III Plus test measures the time required to prepare and print a report of past-due invoices. The report includes calculated fields and is based on three files: a 500-record customer file, a 1000-record invoice file, and a 2000-record item file. When disk caching is not used, the random access speed of the hard disk is, after processor speed, the most significant factor in this benchmark. With disk caching, sequential read performance becomes more important than random access.

Microsoft C 5.0

The Microsoft C benchmark measures the time required to compile and link XLISP. The most important factors in this benchmark are processor and memory access speeds. The performance of the hard disk is also a factor; generally, disk caching has little effect.



Data based on tests designed and conducted by National Software Testing Laboratories (NSTL), Conshohocken, PA 19428. All rights reserved.



The MinisPort HD from Zenith is the least expensive notebook in the roundup. It's also the smallest, and it ties for the lowest weight. However, its performance is the slowest of any we tested, and its screen is both tiny and too wide.

wide that circles look more like sausages than eggs. The keyboard has dedicated cursor keys in a true inverted T, and <Enter> and <Backspace> are nice large keys. However, <Page Up> and <Page Down> are simulated, as are many other keys. Touch is excellent, and key contact is reliable.

The HD's 2MB memory ceiling is a bit low. This is especially unfortunate, since it limits the usefulness of the HD's "hard RAM" disk (a RAM disk that preserves your data even when the PC is turned off). The biggest RAM disk you can create is 1408K.

The Zenith MinisPort HD is light, tiny, and inexpensive, and it boasts an impeccable design. Nevertheless, its relatively short battery life and its small, misshapen screen knock it out of the running.

80286 NOTEBOOKS

Compaq LTE/286 Model 20

Compaq's 80286-based notebook, the LTE/286, is virtually identical to the 8086-based LTE. It's got the same miraculous battery life; the same small size; the same middleweight heft; and the same built-in floppy drive, disappearing keyboard, and small display. And like its brother, it's the most expensive machine in its class.

There are a few differences: The

LTE/286 boasts a higher (2.6MB) ceiling for CPU-speed RAM and offers the useful option of a 40MB hard disk (the only notebook reviewed to do so). And of course with a street price of \$3675 (in the *PC World* configuration), it's considerably more expensive.

All the 80286-based notebooks we ran through our speed suite turned in very similar numbers. The LTE/286 beat the crowd on the *Microsoft C* test, but not by much.

Thanks to its faster performance, excellent RAM capacity, and 40MB option, the LTE/286 makes a more tempting package than the LTE. Moreover, like its slower brother's, its battery life is phenomenal. But its wide screen, poor keyboard, and heavy weight make it seem old-fashioned.



Compaq's LTE/286 Model 20 passes the briefcase test with flying colors, and it shares the LTE's 5-hour battery life. Sadly, it also shares a high price.

Sharp PC-6220



Sharp's brand-new PC-6220 is so thin and light, it's hard to believe it's a real hard disk PC and not a toy. It features a big, beautiful VGA screen, amazing battery life, and a good street price (an estimated \$3653 in the standard *PC World* configuration, with an outboard floppy and an add-on battery "slice"). Since this machine is the only one in the roundup to offer the option, we included the screw-on battery slice as part of the package—you'd need it for anything but the shortest junket.

The PC-6220 was not yet in the stores as we closed this article. To estimate its street price, we averaged the percentage difference between the list

The MinisPort HD is light, tiny, and inexpensive, and it boasts impeccable design.

price and the street price for all the machines in this roundup that *were* in stores (27.6 percent), multiplied that by the PC-6220's \$5046 list price, and subtracted the result.

The specs on Sharp's new baby are outstanding: Its traveling weight is a mere 7.5 pounds, and even with the add-on battery attached to the back, it's still one of the smallest notebooks reviewed. The battery delivers over 5 hours of life in normal use—the best in the roundup. (We ran our tests without a modem; your battery life may be shorter with one installed.) If you go with the standard battery, traveling weight drops to 5.6 pounds, but you get only 90 minutes of battery life.

The VGA-compatible screen is bright, crisp, and very large, and it features a conventional aspect ratio. There's even a standard/reverse switch

More people are turning to Sideways than ever before.

Let Sideways take your printouts to new widths.

Each day, more people turn to Sideways® for printouts of nearly everything that's too wide for a printer. No wonder.

Nothing's as fast or easy. And nothing makes great-looking one-piece printouts that go on this wide. So you get spreadsheets that really spread out. Pert charts that peer far into the future. All kinds of extra-wide printouts without staples, glue or tape.

Sideways runs right inside Lotus 1-2-3.

Sideways works as a full-fledged add-in to 1-2-3® release 2, 2.01, and 2.2. As well as Symphony.® So the instant you're done creating your spreadsheet, you're ready to print with Sideways. Right from your Lotus® session. Just select Sideways from your Lotus menu, highlight a range and print.

Mix bold, underlined and italic type, all on the same page. Print through or skip over perforations. Add borders, change page size. Adjust margins any way you like. And do it all from Sideways menus that look and act just like Lotus itself.

Sideways leaves no text un-turned.

Spreadsheets, databases, word processors, project planners. Sideways is the right way to print with all your software.

Choose from nine different types from "minuscule" to "mammoth." Print bold, underlined or expanded—whatever your software can create. Even foreign language and line drawing characters.

Sideways version 3.2 for the IBM® PC and all popular dot matrix printers, as well as the LaserJet® Plus/Series II. Available at software dealers nationwide, or directly from Funk Software with your check, Visa or MasterCard.

More than ever Sideways is the way to go.

**FUNK
SOFTWARE**

Runs with
Lotus 1-2-3
Release
2.2.

SIDEWAYS®

Please send me _____ copies of Sideways version 3.2 at \$69.95 each.

☐ My check is enclosed. Charge my ☐ Visa ☐ MasterCard

Account number _____ Exp. date _____

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

**To order call 1-800-822-3865, Ext. 228
(617-497-6339 in MA)**

Sideways version 3.2 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 release 2, 2.01, or 2.2, or Symphony.

Circle 148 on reader service card

Funk Software, 222 Third Street, Cambridge, MA 02142
© 1987 Funk Software. Sideways is a registered trademark of Funk Software, Inc.



Introducing the first color PostScript printer priced to keep you in the black.

The QMS
ColorScript 100
Model 10.
Just \$9,995.



November 14, 1989
QMS ColorScript 100 Model 10

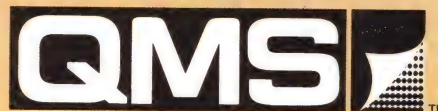


Show-stopping presentations, powerful projections and crystal clear calculations in hard copy or transparency form. Everything your business needs to stand out from the crowd. All in a full spectrum of color for just \$9,995. The QMS ColorScript™ 100 Model 10 easily connects to your Mac® or PC to add full color and the power of true Adobe® PostScript to your business — and, at this price, it helps you stay in the black! It's another first from QMS® and a breakthrough in color PostScript® printers.

Limitless Possibilities. The new QMS ColorScript 100 Model 10 allows you to have total control over the final appearance of your hard copies and transparencies. The Model 10 includes 35 resident typefaces that, thanks to PostScript, can be scaled to virtually any size and shape. Put that together with its ability to print over 16 million color variations and you'll see an entirely new dimension to composition.

Exclusive Advantages. The compact Model 10 gives you advantages you won't find with the competition. For example, PC users can put the Model 10 to work without adding any additional boards. And Mac users simply plug the Model 10 into the AppleTalk® port. The Model 10 prints at 300 dpi for near typeset quality presentations that spring to life in colors that adhere to PANTONE®* Color Standards. If you need to expand your printing capabilities or memory, the Model 10 is designed to easily accept a 1 MB or 4 MB RAM upgrade. The Model 10 also features an SCSI interface that makes adding enough memory to store the entire PostScript typeface library as simple as plugging in a lamp.

1-800-523-2696. If improving your business edge is important to you, call our toll free number for the nearest Laser Connection® dealer. Your Laser Connection dealer can give you a demonstration and show you how the QMS ColorScript 100 Model 10 will add a colorful dimension to your presentations — and help keep you in the black.



1-800-523-2696

The following are trademarks of their respective companies: QMS, QMS ColorScript, Laser Connection of QMS, Inc. PostScript, Adobe of Adobe Systems, Inc. Mac, AppleTalk of Apple, Inc. PANTONE of Pantone, Inc.

*Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials.

©1989 Laser Connection

Circle 202 on reader service card

EXECUTIVE SUMMARY

Nearly Perfect Portables: TI, Sharp Tie for Top Slot

Light notebook laptops deliver portability plus power.

These lightweight, battery-powered, hard disk laptops are extremely easy to carry around, and if you buy wisely, you can get fine screens and battery life too. The perfect keyboard is still on someone's drawing board—although Toshiba's comes close.



The two Best Buys—**TI's TravelMate 2000** and **Sharp's PC-6220**—are really the same machine. Incredibly light and small, they boast terrific VGA screens and excellent battery life. Except for slightly awkward keyboards, they are first-rate. Second-place honors go to Toshiba twice—once for its 8086-based T1000XE and again for its 80286-based T1200XE. Both score Excellent ratings for portability, screen, and keyboard, and the T1200XE rates Excellent on price—but both miss the mark on battery life.

8086 Notebooks				80286 Notebooks			
Compaq LTE	Toshiba T1000XE	Zenith Data Systems Minisport HD		Compaq LTE/286 Model 20	Sharp PC-6220	Toshiba Instruments TravelMate 2000	Toshiba T1200XE
Portability	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Battery life	Excellent	Good	Good	Excellent	Excellent	Excellent	Good
Screen	Fair	Excellent	Poor	Fair	Excellent	Excellent	Excellent
Keyboard	Poor	Excellent	Good	Poor	Good	Good	Excellent
RAM capacity	Fair	Excellent	Good	Excellent	Excellent	Excellent	Excellent
Performance	Excellent	Good	Fair	Excellent	Excellent	Excellent	Excellent
Service and support	Fair	Good	Fair	Fair	Good	Fair	Good
Price	Good	Good	Excellent	Good	Good	Good	Excellent
Overall value	Fair	Excellent	Fair	Good	Excellent	Excellent	Excellent
					BEST BUY	BEST BUY	
Reader service no.	686	727	728	686	725	726	727

How we rate notebook computers

We rate notebooks based on information in the Features Evaluation table and the PC World Test Report, combined with our opinions of quality, reliability, and user benefit.

Portability rates size and traveling weight (including PC, battery, modem, and AC adapter). For an Excellent rating to be awarded, we require a size under 300 cubic inches and a traveling weight under 10 pounds.

Battery life also rates battery-charging features. We require at least 3 hours of battery life (with battery-saving options disabled) for an Excellent rating.

Screen groups ergonomic features that make staring at the PC for hours on end as pleasant as possible. To rate Excellent, a notebook's screen must have 350-line (or better) resolution, an aspect ratio

no wider than 1.6:1, and the ability to display at least four shades of gray (including black and white).

Keyboard covers features that make it easy to switch back and forth between a standard desktop keyboard and that of the notebook. Dedicated cursor keys in a standard inverted T layout, desktop-quality touch, and dedicated page and function keys yield an Excellent rating.

RAM capacity refers to the total amount of installable RAM. Low capacity can degrade memory-hungry programs' performance and limit access to power-saving options like a large RAM disk. Only notebooks with 2.6MB or more receive an Excellent rating.

Performance scores are calculated within the two categories: 8086-based notebooks are compared to the other 8086 laptops, and the 80286-based notebooks are compared to the other 80286

laptops. To earn an Excellent rating a notebook must excel in at least three-quarters of the benchmarks when tested against the other machines in its class.

Service and support includes the length of the warranty, quality of documentation, quality and availability of phone support, support hours, and other support services. A notebook with at least one year's full warranty, free on-site service, and long support hours merits an Excellent rating.

Price refers to street price. The price of each machine is compared to the others in its class: 8086s against 8086s, 80286s against 80286s. To get an Excellent, a notebook's price must be in the lowest third of the price range for its class.

Overall value takes into account all the above criteria with emphasis on battery life, portability, screen, and keyboard.

mounted handily next to the screen.

The keyboard is clearly one of Sharp's concessions to size and weight. It has very shallow travel, and it flexes as you type! However, key contact is unfailing. The cursor keys are dedicated in a standard inverted T, but the

<Page Up>, <Page Down>, <End>, <Home>, <F11>, and <F12> keys are simulated.

Sharp handles service and support through its dealers, but for customer convenience it also provides a toll-free tech support number. We were unable to

check promptness, since you can't get past the receptionist without serial and invoice numbers.

The PC-6220's 3MB memory ceiling is excellent, but its case construction is another matter. Connectors (and the battery) are placed behind pop-off cov-

ers, some of which popped off by themselves during normal handling of the machine. Removing some of the other covers took extended prying—and once popped, they proved hard to replace (and easy to lose). In addition, brightness and contrast controls are awkward push-and-turn knobs next to the screen.

Your sandwich is safe with the PC-6220. This notebook is ultralight, ultraslim, and reasonably inexpensive, and it features the best VGA display reviewed. Moreover, like those ultralight airplanes that are designed to flex, its flimsiness may be illusory. But with a machine this light there's always a trade-off—and in this case it's the keyboard. Nonetheless, for most users the effort of adjusting to the PC-6220's keyboard will be easily offset by its amazing portability and battery life. Best Buy? You bet!

Texas Instruments TravelMate 2000



Texas Instruments (TI) makes the PC-6220 for Sharp and sells it under its own brand name as the TravelMate 2000. Hence, except for a slightly different software bundle, this machine is identical to the PC-6220 in every respect, including the good price, the screw-on battery slice, and the pop-and-drop hatch covers.

Texas Instruments expects customers to go through dealers for service and support. Like Sharp, TI also provides a direct tech support line, but it requires a toll call. Nor was performance impressive: Only two of our three calls were returned, and then only after delays ranging from 3 to 21 hours.

Since TI's and Sharp's machines are essentially the same, the Best Buy recommendation is the same too: Yes!

Toshiba T1200XE

Toshiba's T1200XE is the least expensive 286-based notebook you can buy (\$3238 on the street, in the *PC World*

FLOPPY DRIVES—LOVE 'EM AND LEAVE 'EM

When laptops weighed 25 pounds and were as bulky as fat briefcases, the size and weight of a built-in floppy drive was negligible compared to its convenience. But now that low-power, low-weight displays and hard disks have reduced notebooks to unprecedented lightness and smallness, we're rethinking our position. A built-in floppy (and the larger case to house it) adds bulk and weight.

There are several reasons why you still need a floppy. While a fast, easy-to-use serial-port file transfer program like *Lap-Link* works perfectly well to move files back and forth between your desktop and your notebook, some applications must

be installed from a floppy. Also, if the hard disk ever develops problems, you'll need to be able to boot from a floppy. And if you want to exchange files on the road, it's much easier to use a floppy drive than to hunt up someone who has *Lap-Link* on their PC (or trusts you enough to let you install it).

Unless you expect to use a floppy on every trip, an outboard floppy (which lets you pack the drive when you need it and travel light the rest of the time) makes more sense than a built-in unit. You'll find detailed discussions of floppy options in individual reviews. —M. G.

configuration). Moreover, it boasts excellent portability and the same fine keyboard and double-scan CGA screen as the 8086-based T1000XE. On the downside, its battery life is nothing to write home about.

The T1200XE's 5MB memory capacity is outstanding.

This 9.75-pound unit (with a built-in floppy drive) is both the heaviest and the largest notebook in the roundup. But compared to most laptops, it still deserves an Excellent rating for portability. Its battery life is a more serious problem; under normal operating conditions, you won't even make 2 hours.

Service and support are identical to that for the T1000XE, reviewed earlier.

The T1200XE's 5MB memory capacity is outstanding, and a utility lets you use that memory for a hard RAM disk. Unfortunately, the T1200XE's ergonomics leave something to be desired. Push-

and-turn brightness and contrast knobs are awkward to operate, a stiff latch makes the case hard to open, and the phone plug for the modem is inconveniently placed behind a nail-breaking snap-down hatch cover.

The T1200XE has a lot to recommend it: excellent portability, low price, an outstanding keyboard, a large screen, and a high RAM ceiling. Battery life could be better; but given the realities of the product category, this is still one of the best notebooks you can buy.

Portability Is Prime

This new batch of hard disk notebooks comes closer than ever before to rewriting the tale of two trade-offs (no hard disk, short-lived batteries). The two Best Buys, the Sharp PC-6220 and the TI TravelMate 2000, deliver outstanding portability along with astonishing battery life—and their VGA screens are terrific. Their only significant trade-off is a less-than-fabulous keyboard.

The two Toshiba's (the T1000XE and

New FoxPro

Shifting the Balance Of Power in Database Management

There's a new leader in the relational database management world. Its name is FoxPro.

FoxPro is the first and *only* microcomputer database management system that combines astonishing performance with a sleek interface of amazing power and beauty.

- FoxPro offers all the elegance and accessibility of a graphic-style interface, yet operates at the stunning speeds possible only with character interfaces.
- FoxPro is so easy to learn and use, even beginners can become productive immediately; yet it's powerful and sophisticated enough to satisfy the needs of the most demanding developers and power-users.
- FoxPro gives you choices instead of limits: use a mouse or a keyboard; type commands or use the object-oriented interface; run in one window, or hundreds.
- FoxPro is so efficient, it runs in a 512K PC-XT, yet it's able to take advantage of the speed, expanded memory and extended video modes of the most advanced machines available. You don't even need a graphics card or special windowing software.



Nothing is Faster

Fox Software products are famous for their unmatched execution speed. FoxPro extends that tradition.

FoxPro is up to eight times faster than dBASE IV—more than 15 times faster than dBASE III PLUS!

And that blazing speed translates into unprecedented power. Now you can efficiently process gigantic databases with hundreds of thousands—even millions—of records.

Protecting Your Investment

With FoxPro, your existing FoxBASE+ or dBASE III PLUS programs will run perfectly—first time, every time, no excuses. And FoxPro is language-compatible with dBASE IV. But FoxPro doesn't stop there. It has over 140 language enhancements not found in any version of dBASE. We've outdone ourselves by adding more than 200 language extensions you won't find in FoxBASE+.

Best of all, FoxPro opens up whole new worlds for your applications by letting you move them onto a variety of different platforms.

The Tradition Continues

Fox Software is committed to excellence—our products prove it.

We've been producing superb database management software since 1983. And our products for both the PC and the Macintosh continue to win awards worldwide.

We've taken everything we know about software engineering, databases and interface design, and focused it into one remarkable product—FoxPro.

FREE Demo Disk

Shift the balance of power in your favor by trying FoxPro for yourself.

Call (419) 874-0162 now to get your free demo disk. Or ask for the FoxPro dealer nearest you. See for yourself: **Nothing Runs Like The Fox.**

FoxBASE+ Users: Call About Our Liberal Upgrade Offer!

System Requirements: FoxPro operates in 512K RAM (640K recommended) with MS/PC-DOS 2.0 or greater and an 8086/8088, 80286 or 80386 microprocessor. For optimum performance, FoxPro takes complete advantage of any available EMS (expanded memory) or a math coprocessor.

Trademark/Owner: FoxPro, FoxBASE+/Fox Software; dBASE III PLUS, dBASE IV/ Ashton-Tate.

Fox Software

Nothing Runs Like The Fox.

Fox Software, Inc. (419) 874-0162
134 W. South Boundary FAX: (419) 874-8678
Perrysburg, Ohio 43551 Telex: 6503040827 FOX

Circle 56 on reader service card



Shopping for Sound?



*Fill Your Bag With Music, Special Effects, Digitized Voice, and MIDI...
the sound solution for games and multi-media presentations.*

EXCHANGE POLICY: You can exchange your Adlib, C/MS, Covox, or GAME BLASTER and **SAVE \$100** off the suggested retail price. Just send your card and \$139⁹⁵ (check or credit card number) to Brown-Wagh, 130-D Knowles, Los Gatos, CA 95030.

SYSTEM REQUIREMENTS: SOUND BLASTER requires 512K or RAM. DOS 2.0 or higher, and CGA, EGA, VGA, or Hercules monographics, and external speakers.

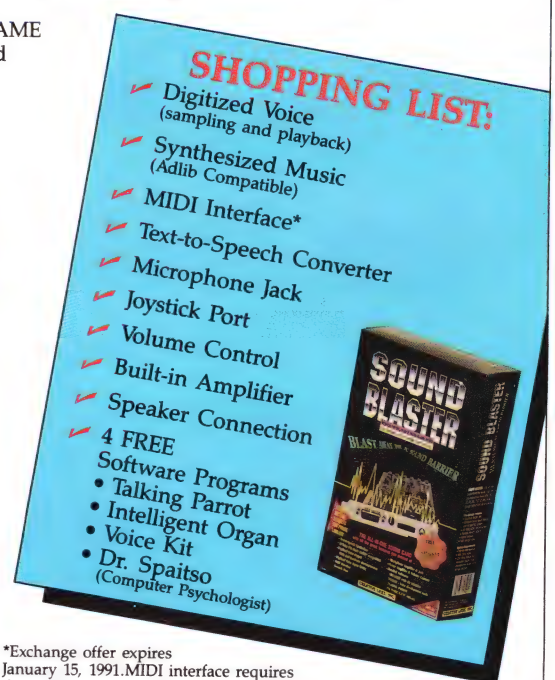
Get the MIDI Connector Box
and Voyetra's Sequencer Plus Jr.
for \$129⁹⁵ (a \$150 value)

SOUND BLASTER **\$239⁹⁵**

Partial list of companies in development or currently supporting SOUND BLASTER:
Access Software, Accolade, Activision, Asymmetrix, Autodesk, B.A.O., Broderbund, Capcom, Cinemaware, Corel Systems, Cosmi, Data East USA, Davidson Assoc., Dynamix, Electronic Arts, Farallon, First Byte, Gamestar, Hewlett-Packard, IBM, ICS, JRM Software, Konami/Ultra, Kyodai, Level 9 Computing, Lucasfilm, Macromind, Mastertronic/Virgin, Mediagenics, Michtron, MicroGrafix, MicroProse, Microsoft, Mindscape, Omnitrend, Origin System, Rix Software, Sierra On-Line, Software Toolworks, Spectrum Holobyte, Strategic Simulations, Synergistic Software, Sublogic Corporation, Taito, The Learning Company, Voyetra and Zuma Group.

*Brown
Wagh*

408-378-3838 (inside CA)
800-451-0900 (outside CA)



*Exchange offer expires January 15, 1991. MIDI interface requires the MIDI Connector Box. Referenced products and companies are registered trademarks of their respective holders.

the T1200XE) boast fine portability too, plus excellent keyboards and screens—but their battery life is less than 2 hours. Both the Compaqs (LTE and LTE/286) feature excellent battery life, but they're expensive—and they fall

down on screen and keyboard.

Clearly, there's still some way to go, but as trade-offs between power and portability grow fewer, these notebooks are looking more and more like the PCs of the future. ☺

Michael Goodwin is an associate editor for PC World.

For more information about all products in this article, circle reader service no. 909.

WHERE TO BUY

Compaq LTE, Compaq LTE/286 Model 20

Compaq Computer Corp.
P.O. Box 692000
Houston, TX
77269-2000
800/231-0900
LIST PRICE: LTE with 640K RAM, 1.44MB floppy drive, and 20MB hard disk \$2699; LTE/286 Model 20 with 640K RAM, built-in 1.44MB floppy drive, and 20MB hard disk \$3499
ACCESSORIES: 12-MHz 80C287 coprocessor (LTE/286) \$799; expanded memory upgrade board with 384K RAM (LTE) \$349, 1MB memory expansion board with 1MB RAM (LTE/286) \$699, 2MB memory expansion board with 2MB RAM (LTE/286) \$1299; external 360K floppy drive \$275, external 1.2MB floppy drive \$275, external 1.44MB floppy drive \$275; 20MB hard disk \$799, 40MB hard disk (LTE/286) \$1199; 2400-bps internal modem \$449; DOS 3.31 \$120, DOS 4.01 \$150, OS/2 1.1 or 1.21 (LTE/286) \$340; external numeric keypad \$119; external fast charger/AC adapter \$199, automobile power adapter \$129; battery pack \$129; carrying case \$89
WARRANTY: one year parts and labor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT:

via dealer
OTHER SUPPORT: none
Reader service no. 686

Sharp PC-6220

Sharp Electronics Corp.
Sharp Plaza
Mahwah, NJ 07439
201/529-9500, 201/529-8919 (fax)
LIST PRICE: with 1MB of RAM, 20MB hard disk, DOS 4.01 \$3999
ACCESSORIES: 1MB RAM upgrade \$499; outboard 1.44MB floppy drive \$299; 2400-bps Send Fax internal modem \$499; external numeric keypad \$99; add-on battery pack \$249; internal battery \$129; carrying case \$69, all-accessory carrying case \$99; video interface card \$149; expansion unit \$699
WARRANTY: one year parts and labor
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M-F 9-5; fax
OTHER SUPPORT: in-house BBS
Reader service no. 725

Texas Instruments TravelMate 2000

Texas Instruments, Inc.
P.O. Box 202230
Austin, TX
78720-2230
800/527-3500
LIST PRICE: with 1MB RAM, 20MB hard disk, DOS 4.01 \$3999
ACCESSORIES: 12-MHz 80C287 coprocessor \$799; 1MB RAM upgrade \$549; outboard

1.44MB floppy drive \$299; 2400-bps Send Fax internal modem \$499; external numeric keypad \$99; add-on battery pack \$249; extra internal battery \$129; carrying case \$99; video interface card \$149
WARRANTY: one year parts and labor standard; one year with overnight exchange \$84; one year with on-site service \$132
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll number, M-F 8-5; fax
OTHER SUPPORT: none
Reader service no. 726

Toshiba T1000XE, Toshiba T1200XE

Toshiba America Information Systems, Inc.
Computer Systems Division
9740 Irvine Blvd.
Irvine, CA
92713-9724
800/334-3445
LIST PRICE: T1000XE with 1MB RAM and 20MB hard disk \$2699; T1200XE with 1MB RAM, built-in 1.44MB floppy drive, 20MB hard disk \$3999
ACCESSORIES: 1MB RAM (T1000XE) \$599, 2MB RAM (T1000XE) \$999, 2MB RAM (T1200XE) \$1099; external 360K floppy drive \$499, external 1.44MB floppy drive \$249; 2400-bps internal modem \$349; DOS 3.3 \$99, DOS

4.01 \$120; external numeric keypad \$99; external recharger/AC adapter \$349, automobile power adapter \$129; battery pack (1700 mAh) \$79, battery pack (2200 mAh, for T1200XE only) \$129; carrying case \$99
WARRANTY: one year parts and labor
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: toll-free number, M-F 7-5
OTHER SUPPORT: BBS
Reader service no. 727

Zenith Data Systems MinisPort HD

Zenith Data Systems
1501 Feehanville Dr.
Mount Prospect, IL
60056
800/553-0331, 708/699-3898 (fax)
LIST PRICE: with 1MB

RAM, external 720K floppy drive, 20MB hard disk, DOS 3.3 Plus \$2799
ACCESSORIES: 1MB RAM expansion board with 1MB RAM \$799; external 360K floppy drive \$399, external 720K floppy drive \$299; 1200-bps internal modem \$149, 2400-bps internal modem \$399; battery charger 110/220 VAC \$109; battery pack \$79; carrying case \$59; slipcover \$12
WARRANTY: one year parts and labor
EXTENDED WARRANTY: available
TECHNICAL SUPPORT: via dealer
OTHER SUPPORT: none
Reader service no. 728

POWER TIP NO. 134

Adding Text to Excel Graphs

It's very easy to add free-floating text to Excel graphs. In an active graph window with no graph elements selected, just type your text. When you press <Enter>, the text appears in a box that you can move or resize. You can also change the box's font, colors, or borders.

Robert Lauriston
Associate Editor

DR DOS 5.0. WE COULDN'T HAVE SAID IT BETTER.



So what's all the hoopla about? MemoryMAX™, for one thing. A breakthrough in memory management that can give you more than 620K so you can run today's memory-intensive applications, including, for example, dBASE IV, on Novell NetWare™.

In fact, John Dvorak calls MemoryMAX nothing short of "amazing."

The Press goes on to mention that because DR DOS 5.0 is fully DOS compatible, you can run all your current DOS applications. And because it is easy to install and requires no hard disk reformat-

ting, upgrading to DR DOS is simple. Since DR DOS 5.0 also includes ViewMAX™, a graphical interface, DOS is easier than ever to use.

Now if we could just get a word in edgewise, we would simply like to add that DR DOS 5.0 is available now. Call us at (800) 443-4200 today.

DR DOS 5.0

 **Digital Research®**
WE MAKE COMPUTERS WORK

For Laptop and Notebook manufacturers, DR DOS 5.0 is fully executable from either RAM or ROM. And, it's available with BatteryMAX™, a battery-saving feature that can increase battery life 2-3 times (dependent upon OEM implementation).

Digital Research is a registered trademark, and the Digital Research logo, DR DOS, MemoryMAX, ViewMAX, and BatteryMAX are trademarks of Digital Research Inc. Copyright © 1990, Digital Research Inc.

Reprinted from PC Week May 14, 1990. Copyright © 1990 Ziff Communications Company.
Reprinted with permission from The San Francisco Examiner. Copyright © 1990 The San Francisco Examiner.

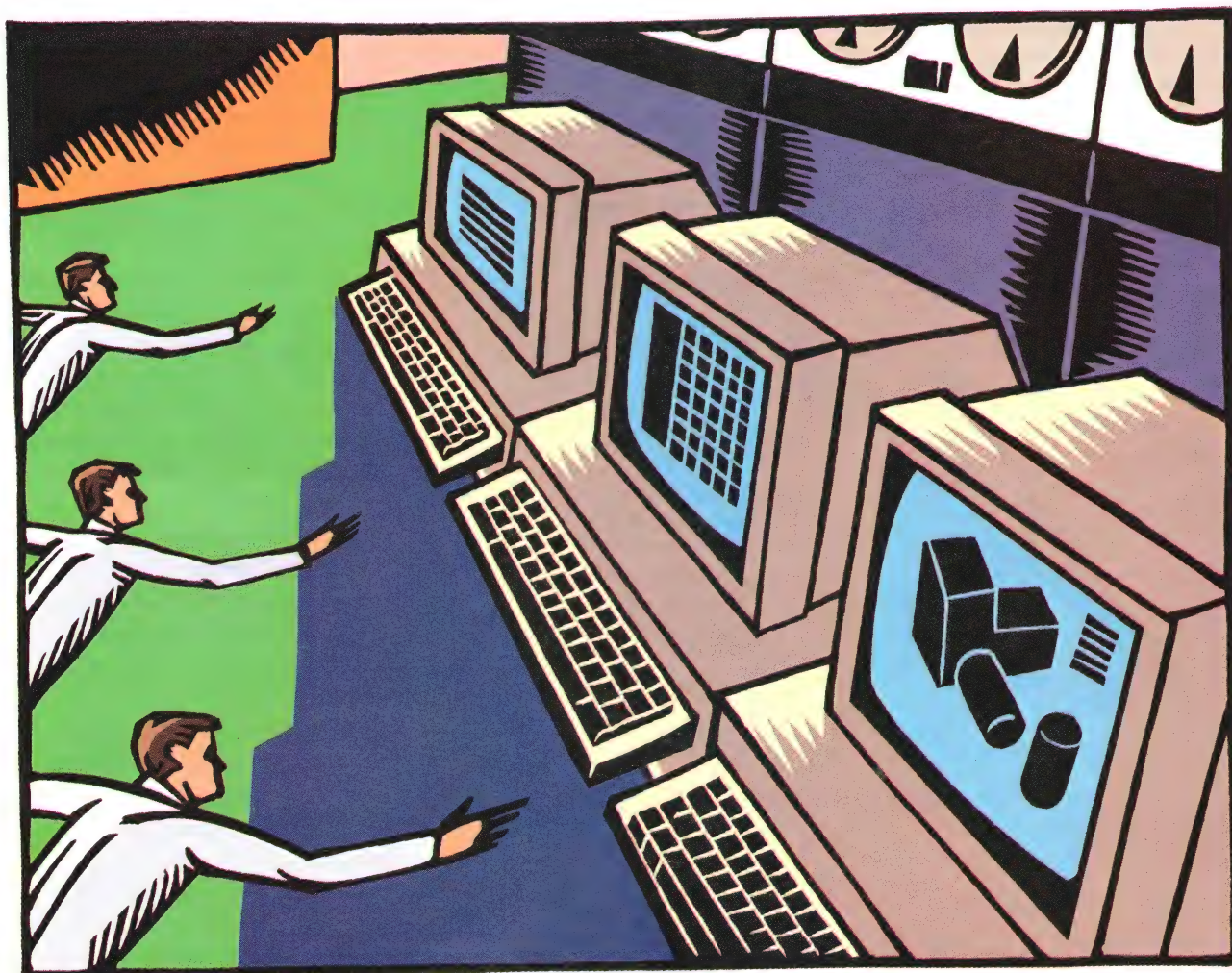
Circle 51 on reader service card

Four SQL Data Bases:

Mainframe Muscle in a PC Package

OS/2 SQL data base servers from IBM, Microsoft, Oracle, and Gupta promise mainframe performance over affordable PC networks. Until SQL front ends arrive in force, though, the development challenges may be too much for most users.

Tyler Band



SCOTT BALDWIN

Until recently, PCs couldn't come close to performing the key function of minicomputers and mainframes: providing many users shared access to huge quantities of data. But as today's 386- and 486-based network servers gain gigabyte-sized hard disks and fault-tolerance features, putting a mainframe-sized data base at the hub of a PC local area network (LAN) is becoming a real possibility.

Unfortunately, conventional PC-based multiuser data managers aren't up to the task. As the number of users grows and the size of the data base increases to big-iron proportions, programs such as *dBASE* and *Paradox* bog down miserably. Furthermore, the security and data integrity features of the typical PC-based data managers can't measure up to those of large-system products.

The computer industry's proposed solution is the *data base server*, a software engine that runs on the LAN server and provides data processing ser-

vices for the entire network. With conventional multiuser data managers, workstations do all the processing and often must download entire files from the LAN server to run a simple query—a good way to cause LAN congestion. Data base servers cut traffic drastically by doing the job *at the server*, sending the workstation only the records that match the query.

Today's most promising data base servers use Structured Query Language (SQL), a nonprocedural language popular with mini and mainframe data base programmers. SQL data base servers provide not only better performance on large LANs than do conventional data bases, but also improved security and reliability—plus the potential to link with mainframe SQL data bases.

The most exciting development, however, is that a host of PC software developers are teaching their applications to speak SQL. As a result, instead of having to learn a new application to query the company data base, you'll be able to

use your favorite data manager or spreadsheet (see the sidebar "Uncomplicating SQL: Easy Front Ends Are the Puzzle's Final Piece").

But make no mistake: SQL servers are bleeding-edge technology. This review of four SQL data base servers—IBM OS/2 Extended Edition 1.2's Database Manager, *Oracle Server for OS/2 1.0*, Gupta's *SQLBase Server for OS/2 4.0.1*, and Microsoft's *SQL Server 1.0*—clearly demonstrates that you can't overestimate the difficulty of setting up a data base using any of these products. The bottom line is that if you're committed to making SQL server power available *now*, you'll need a good data base programmer and plenty of time to get things up and running.

The Price of Power

Any multiuser data base needs the services of an experienced developer. With conventional multiuser data managers, setting up the data tables themselves is fairly trivial. But to keep users from corrupting the data base, you need custom-written front ends.

dBASE IV, *R:base*, *Paradox*, and *Advanced Revelation*—virtually all the major PC data managers—include tools (many menu-driven) that ease application development. By contrast, the programming aids that come with Database Manager, *Oracle Server*, *SQL Server*, and *SQLBase Server* are either primitive or difficult to use. In addition, the developer needs fluency in two languages—SQL, plus C, COBOL, or one of the other languages these products understand—to set up tables and complete an application. And since none of the programs offers modern debugging tools for SQL code, trial and error is the order of the day.

In a conventional multiuser data base, a programmer builds data validation into a custom front end to keep you from entering invalid part numbers, changing past income, putting text in a numerical field, and so on. But again, with SQL server data bases, you'll want to build data validation into the data

Queries Are Simpler With SQL



dBASE

```
clear all
set talk off
use salary index sindex1
select 2
use roster index rindex1
set relation to ss_num into salary
select 3
use grades index gindex1
set relation to emp_num into roster
set filter to left(roster->lname,1)='L'
list EMP_NUM, roster->LNAME, roster->FNAME,;
salary->SALARY, GRADE
clear all
set talk on
```

SQL

```
select emp_num, lname, fname, salary, grade
from grades, roster, salary
where roster.emp_num = grades.emp_num and roster.ss_num = salary.ss_num and lname like 'L%'
order by emp_num
```

Querying is much simpler using Structured Query language than it is with the dBASE language. In this example, displaying five fields from three related tables takes 13 arcane dBASE III Plus commands but requires only 1 straightforward, English-like SQL command.

FEATURES EVALUATION

SQL Server: Peerless Security, Superior Programming

Wide support by a variety of front ends, rock-solid data security features, and top administrative and programming powers put SQL Server ahead of the competition.

- Yes
- No
- ◐ Deficient
- △ Limited only by available RAM

Standard features

	IBM Database Manager	Oracle Server for OS/2 4.0.1	SQLBase Server for OS/2 1.0	SQL Server 1.0
Price	\$830 ¹	\$3699	\$2495	\$2495
Maximum number of simultaneous users ²	△	40	△	250
Minimum RAM required/ additional RAM required per user	9.5MB/ 150K	8MB/ 250K-512K	4MB/ 3K	8MB/ 42K
Multiple active data bases	●	○	●	●
Data base can span disk volumes	○	●	○	●
Workstation query-report utility	◐ ^{3,4}	● ⁴	○	○

Compatibility

Available front ends				
1-2-3	◐ ⁵	●	●	●
Excel	◐ ⁵	◐ ⁵	●	◐ ⁵
DataEase SQL	◐ ⁵	◐ ⁵	○	◐ ⁵
Paradox SQL Link	◐ ⁵	◐ ⁵	○	◐ ⁵
Advanced Revelation	◐ ⁵	◐ ⁵	○	◐ ⁵
IBM OS/2 Extended Edition Query Manager	●	○	○	○
LAN support				
NetWare	○	●	◐ ⁶	●
LAN Manager	○	●	◐ ⁶	●
NETBIOS-compatible LANs	○	●	●	○
Banyan VINES	○	●	◐ ⁶	○
Import delimited ASCII files	●	●	●	●
Import graphics	○	○	◐ ⁷	●

Administration

Manage selected users as group	●	●	○	●
Back up active data base	○	○	●	●
Auditing (activity log)	○	●	●	◐ ⁸
Monitoring (real-time)	○	●	●	●
Terminate selected-user process	○	○	○	●
Compress data base	●	○	○	●
On-line help	●	◐ ⁹	○	●
Tutorial	○	○	●	●

Data security

	IBM Database Manager	Oracle Server for OS/2 4.0.1	SQLBase Server for OS/2 1.0	SQL Server 1.0
Exclusive locks	●	●	●	●
Shared locks	●	●	●	●
Primary-key referential integrity	●	●	●	●
Foreign-key referential integrity	●	○	○	◐ ⁸
Enforce business rules	○	○	○	●
Transaction rollback	●	●	●	●
Transaction roll-forward	○	●	●	●

Programming

Languages supported				
C	●	●	◐ ⁴	●
COBOL	●	●	◐ ⁴	●
BASIC	○	○	○	●
FORTRAN	●	●	○	○
Pascal	●	○	○	○
Proprietary procedural language	●	○	◐ ⁴	●
Windows tool kit	●	○	◐ ⁴	●
Server-based subroutines	○	○	○	●
Query syntax optimizer	●	○	●	●
Delete column	○	○	●	○
Rename column	○	●	●	●
Set default column values	○	○	◐ ¹⁰	●
Aliasing	○	●	●	●
Outer joins	○	●	●	●
Auto date-time stamp	○	●	○	●
Turnkey programming services	○	● ⁴	● ⁴	○

¹ Price is for IBM OS/2 Extended Edition 1.2, which includes Database Manager.

² Actual maximum number of users will depend on amount of RAM in server.

³ IBM OS/2 Extended Edition 1.2 workstations only.

⁴ Available at extra cost.

⁵ Announced but not shipping at press time.

⁶ DOS workstations must run NETBIOS.

⁷ Fields limited to 32K.

⁸ Only by manually programmed triggers.

⁹ Only for some functions.

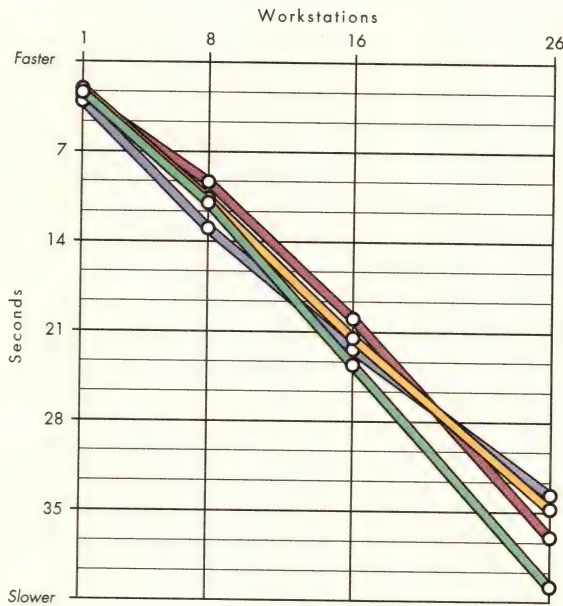
¹⁰ Set to zero or current date only.

PC WORLD TEST REPORT

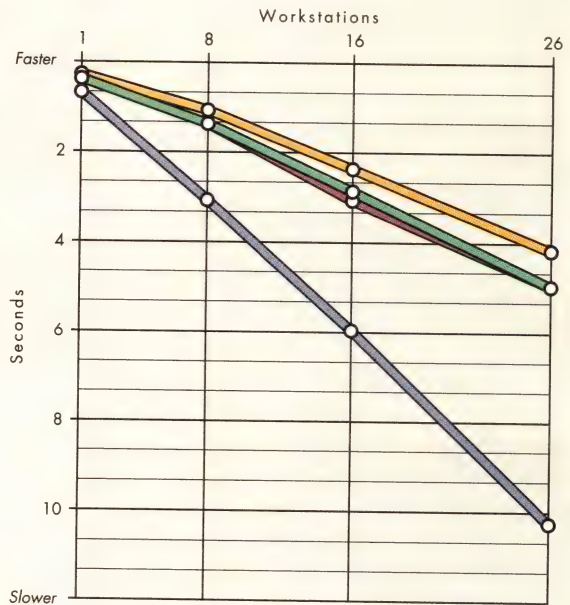
Fast Service From SQL Server

Microsoft's SQL Server provides the best overall performance and holds up best under heavy loads. Oracle Server and Gupta's SQLBase are close behind, but IBM OS/2 Extended Edition's Database Manager trails badly.

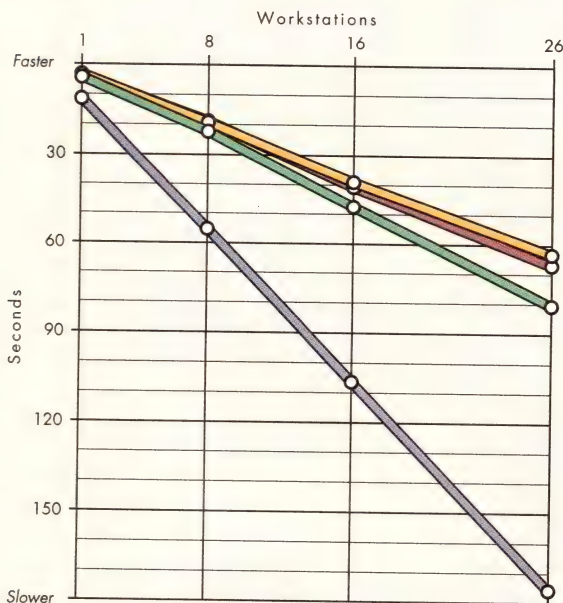
Order



Payment



Author



Legend: IBM (grey line), Oracle (red line), SQL Server (yellow line), SQLBase (green line).

Methodology

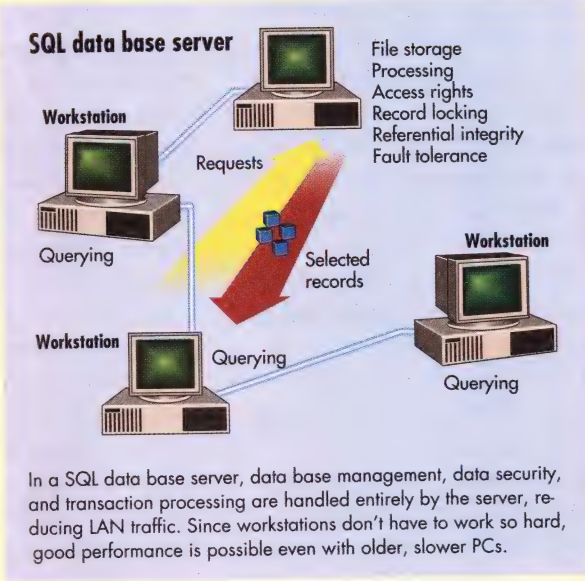
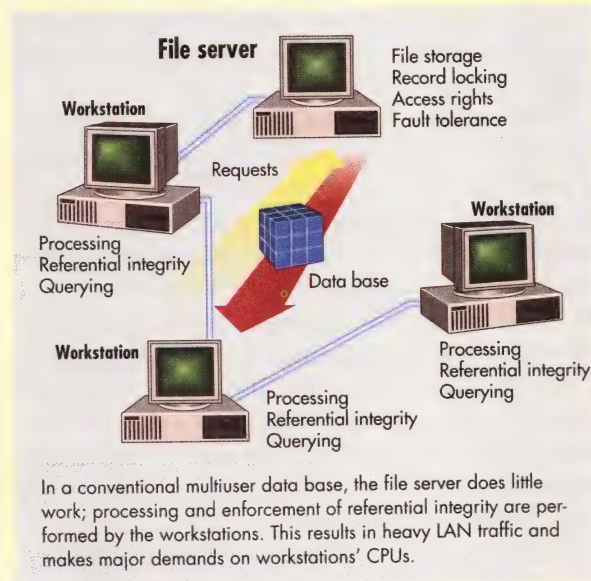
A 25-MHz IBM PS/2 Model 80 with two 300MB hard disks and 16MB of RAM acted as both LAN server and data base server. Workstations were 16-MHz Everex Step/386si SX systems with 4MB of RAM and IBM Token-Ring adapters. For every program except IBM OS/2 Extended Edition, the server used IBM OS/2 1.1 as the operating system. The workstations used Compaq OS/2 1.1, and the network used the 3Com 3+ Open 1.1 operating system. IBM OS/2 Extended Edition used its integrated operating system, Communications Manager, and Database Manager. All programs were set up to use one hard disk for the data base and the other for log files.

The three tests simulate various aspects of a single transaction-processing system based on a hypothetical book-selling business. In the Order test, each transaction creates an order for five books selected at random. Transactions in the Author test select a single book by the author's name. Payment test transactions pick an order at random, invoice it, and update inventory.



Data based on tests designed and conducted by National Software Testing Laboratories (NSTL), Conshohocken, PA 19428. All rights reserved.

Data Base Servers Cut LAN Traffic, Speed Up Queries



base itself. If you're going to offer access to users through SQL versions of *1-2-3*, *Paradox*, *DataEase* and so on, you *must* consolidate data validation on the server to protect the integrity of your data—even if you've written a custom front end for data entry (something most businesses that maintain large data bases will do in any event).

In the future, developers will supposedly be able to set up a data base—from the data tables, to security, to custom front ends—using SQL versions of popular PC data managers (see the sidebar "Data Base Alternatives: Client-Server Computing Without OS/2"). Until then, you need to find a fearless bilingual programmer with lots of free time, or wait until an in-house developer gets up to speed in SQL.

Choose Your Engine

Obviously, electing to buy into SQL server technology is no casual choice. Perhaps you've just added a couple of users to your tried-and-true multiuser data base, and even with powerful PC hardware you're starting to get complaints about performance. Or you're planning on setting up a shop full of data

entry clerks, and your consultant whips out a VAX brochure.

In other words, the time to consider a SQL server is when a mini or mainframe is the only other solution. Assuming you're primed to take the plunge, consider the following buying issues:

Compatibility The crucial factor in choosing a SQL server is the selection of compatible third-party front ends. These must be written for a specific server, so if your office has standardized on *Paradox*, for example, you should select a server that *Paradox* supports in order to avoid retraining.

At this writing, *SQL Server* enjoys the lion's share of support—compatible versions of *1-2-3*, *Advanced Revelation*, *DataEase*, *Excel* (with the *Q+E* add-in), and *Paradox* are all either shipping or will be released shortly. Vendors seem to be taking more time supporting the other servers, but only *SQLBase* is short on major vendors with announced plans for front ends.

Of the four servers reviewed, only Database Manager and *Oracle Server* offer front ends that enable users to query and revise data and generate reports. Although Database Manager has

the better user interface, you'd probably prefer to use a third-party front end or write your own.

LAN compatibility is also crucial—unless you're willing to switch network operating systems to suit your data base server. *Oracle* and *SQLBase* can handle all major LANs, and *SQL Server* talks to both *LAN Manager* and *NetWare*, but Database Manager runs only with *LAN Server 1.2*.

Administration All four programs are basically easy to install. And all but *SQLBase* have the key administrative feature: the ability to assign access rights to users in *user groups*.

Access rights are usually assigned by department and job position—personnel clerks can view all information in the employee file except salary, for example. User groups are merely predefined sets of privileges; you can change a user's access rights merely by moving him or her from one group to another. Without user groups, you must assign access rights to files, records, and fields one user at a time.

The ability to back up an active data base is also important; without it, you can't have round-the-clock access to the

system. In addition, the ability to monitor data base activity (both in real time and in an activity log) has its uses—it's helpful for fine-tuning performance, spotting ill-behaved applications, and identifying users who attempt unauthorized access.

Data Security This category includes four elements: access rights, locks, referential integrity, and fault tolerance. The four programs have identical SQL-standard capabilities that enable administrators to assign different levels of access to different users. In addition, all four programs have in common one serious limitation: You can't generate a full report of rights granted, but instead have to generate a separate report for each user or group.

Locks determine how a server arbi-

trates simultaneous attempts to access the same data. When someone updates a record, an *exclusive lock* kicks in and prevents anyone else from viewing or revising that record. A *shared lock* permits more than one user at a time to query or view a record. All four servers have these two basic lock types.

Referential integrity prevents users from corrupting the data base with bad entries. *Primary-key* referential integrity, found in all the servers, requires each entry in a column to contain a unique value (such as a record number), prohibiting duplicate records. Only Database Manager, however, has *foreign-key* referential integrity, which restricts entries in a column to those values that can be found in a specific column in another table—limiting packing

slips to valid part numbers, for example. Programmers can add foreign-key integrity to *SQL Server* data bases by writing special routines; in *Oracle* and *SQLBase*, the front end must handle this task.

Fault tolerance helps avoid loss or corruption of data due to a system crash or power failure. Transactions are recorded in a log file (kept on a separate hard disk for added safety). After a crash, this log file lets the data base administrator "roll back" incomplete transactions, removing the partial updates from the data base, or "roll forward" completed transactions, writing the remaining data to disk. Database Manager has only rollback; the others have both.

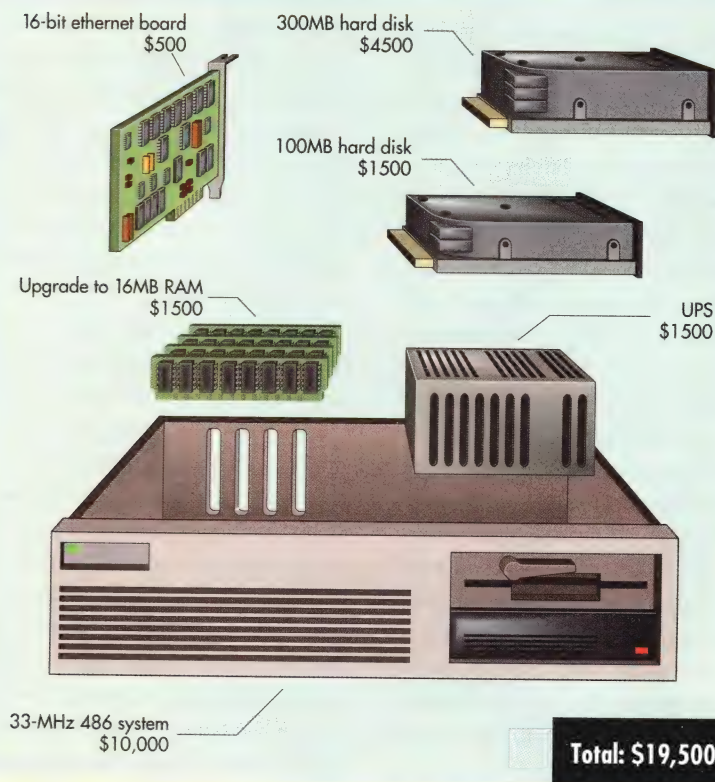
Performance Each of our three performance benchmarks simulated a typical transaction-processing task. We ran each benchmark with 1, 8, 16, and 26 workstations to determine the degree of performance decay that occurs with additional users. For three of the servers, the performance differences were slight; however, Database Manager's performance fell well below the rest in two tests.

Programming It's important that a server support a variety of languages. Although all can be programmed with C or COBOL, *SQL Server* is the only one that speaks BASIC. More important, *SQL Server* lets you write subroutines and run them on the server—giving you tremendous flexibility in creating server-based data validation.

Price Since developing a single data base application will likely cost much more than the server software does, price is not an issue. However, you may want to figure cost over the long term based on the maximum number of users each server supports.

Surprisingly, the number of simultaneous users the servers can handle varies widely. *Oracle* accommodates only 40 users; *SQL Server*, 250; Database Manager and *SQLBase* have no fixed limit. However, since each user who logs in takes up some of the server's memory,

Heavy Hardware for SQL Servers



For top performance, a SQL data base server needs the fastest system and hard disk you can afford, with a full 16MB of RAM. The second, smaller hard disk holds transaction log files, and an uninterruptible power supply (UPS) gives extra protection against power failures. While the server's price tag may appear high for a PC, it's only a fraction of the cost of the mini-computer or mainframe it displaces; maintenance costs are also lower.

TIRED OF KEEPING UP WITH THE TECHNOLOGICAL JONES'?

The competition has a "me too" way of defining their computers. On the other hand Dauphin Technology has a "can do" approach to laptops. We look you straight in the eye, hear about your needs and with our dynamic vision present to you our family of laptops. Our mission is simple - a portable computing solution for every segment of the business community.

THE DAUPHIN 3000 SERIES*

An industry first in the color TFT (Thin Film Transistor) screen technology. This laptop comes standard with a 200 MB hard drive and a 386SX microprocessor at 20 MHz. This is the premier laptop in our family. We use it constantly for our graphics oriented presentations.



THE DAUPHIN 2000 SERIES*

A number crunching laptop for the workforce of the 90's. This series features a dedicated numeric keypad and the kind of power you expect in a desktop unit. The 386SX-16 and 386DX-25 MHz microprocessors provide the speed and portability people love. We like to think of this series as the no-compromise portable computing solution for the best of us.



THE DAUPHIN 1000 SERIES*

This is the laptop that will shake up the industry. Its modular nature makes it the most versatile laptop ever created. In 6.5 lbs. we offer a customized workstation for the weight and security conscious. We offer 286-12, 386SX-20 and 386DX-25 MHz CPU options. Our engineers love to call it the "swiss army knife", we believe the "modular workstation" to be more appropriate.



THE DAUPHIN LapPRO SERIES

Our first line of laptops and our love affair with it still continues. This series comprises of a 286-12 and a 386SX-16 MHz CPU. Both are expandable to a 200 MB hard drive and provide high performance at very affordable prices. The internal power supply of the LapPRO series is still the most intelligent and innovative feature available.



Our competition likes to look amongst themselves for inspiration. We find it from our customers wants and needs. This philosophy is what makes us produce absolute innovation as opposed to an incremental compromise. Come see our laptops in action. The technological Jones' will be there too.

BOOTH N3622 FALL COMDEX 1990

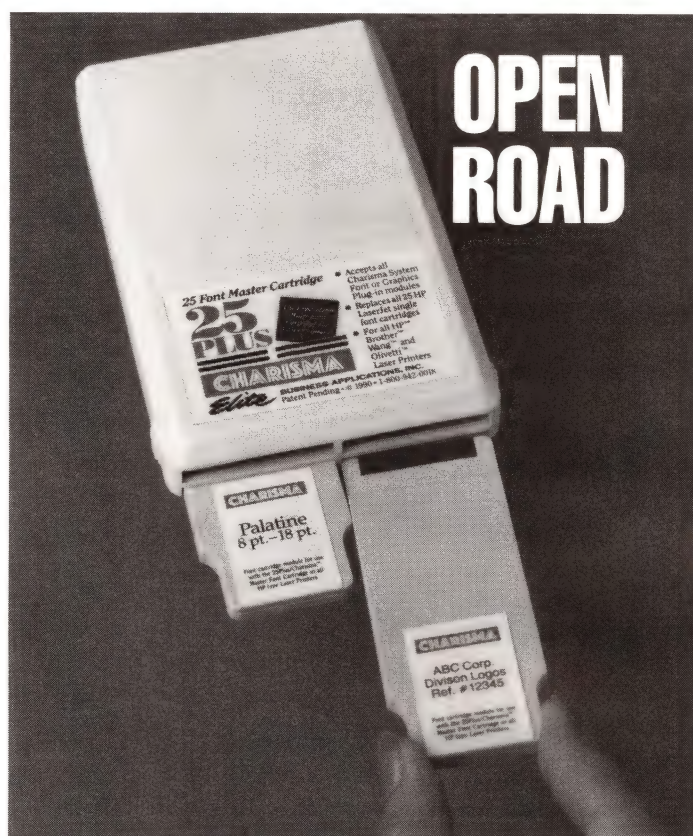
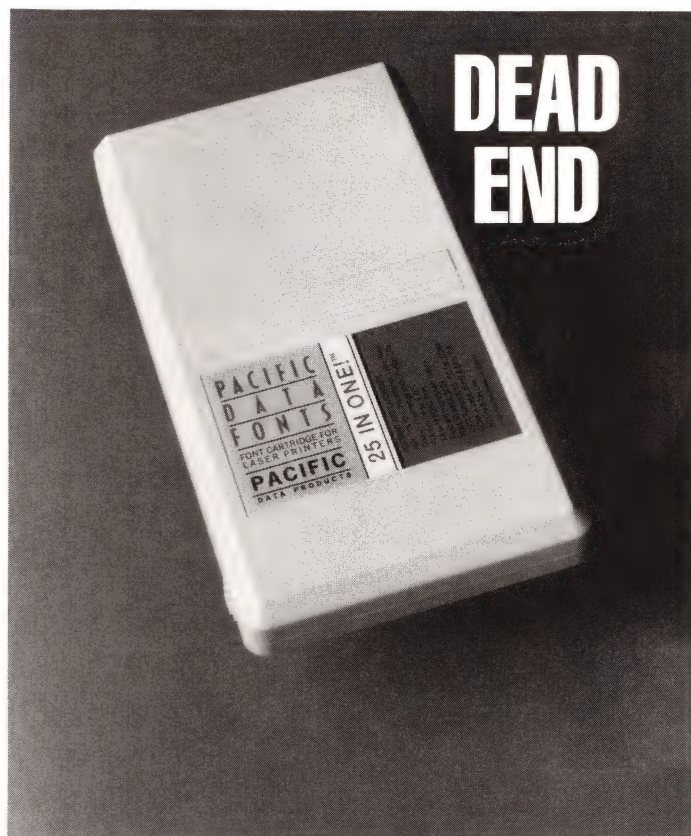
Dauphin Technology, Inc. 1125 East St. Charles Road, Lombard, Illinois, U.S.A Telephone 708 • 627 • 4004

*This device has not been approved by the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased until the approval of the FCC has been obtained.

Circle 66 on reader service card

Introducing the next dimension in Laser Printing productivity

NOW THERE ARE TWO WAYS TO GO WHEN YOU SHOP MULTI-FONT LASER CARTRIDGES:



It's easy to see the differences between these two exceptional font cartridges, but here's a closer look.

FEATURE	25 IN ONE!™	25 PLUS/CHARISMA
All 25 HP "A-Z" Font Cartridges	Yes	Yes
100% HP Compatible with LJ, II, IID, IIP, III	Requires an additional cartridge	Yes
Actual Number of Type Choices	69	77
Symbol Sets	20	22
Bar Codes & Postal Codes	No	Yes
Z Bats	No	Yes
Maximum Point Size	18 points	Unlimited with modules
Spreadsheet Sizes	3.6 points	3.6, 4.8 points
Headline Sizes (24-48 points)	Requires a \$399 additional cartridge	Unlimited with modules
Accepts Additional Fonts	No	Unlimited with modules
Custom Forms/Graphics	No	Unlimited with modules
Drivers for Most Programs	Yes	Yes
Cartridge Price	\$399.00	\$399.00
Module Price	NA	\$99.00
Expansion Potential	None	Unlimited

Note: 25Plus/Charisma is a trademark of Elite Business Applications, Inc. All other products mentioned are trademarks of their respective holders. Prices are subject to change without notice. Copyright 1990, Elite Business Applications, Inc. Patent Pending.

For the name of your reseller, call 1-800-942-0018 today and test drive the hottest new number on the open road.

Company logos. Letterheads. Forms. Signatures. Countless typefaces and custom graphics. Elite presents 25Plus/Charisma, the revolutionary, customizable font cartridge system that offers all this and more. Instantly, at the printer level, without tediously downloading graphics.

Best of all, it's simplicity itself to install, to document and to use. With it, you and your HP laser printer can turn a piece of blank paper into anything imaginable.

Begin with the master cartridge containing the 25 basic HP "A-Z" cartridge series. Plus valuable extras like Postal Codes, Bar Codes, Z-Bats, 24 and 30 point headlines, and 3.6 and 4.8 point spreadsheet fonts. (Use this chart to compare details)

Then, with our exclusive Charisma™ plug-in module system, you can design your own collection of modules with additional stock typefaces, or headlines, forms and custom graphics, and access any of them—at the printer level—through the master cartridge. You can choose from an evergrowing collection of our individual stock typeface modules for such popular typetypes as Avant Garde, Park Avenue, Palatine, Garamond, Headlines, and on and on.

But the real magic comes in creating your own office forms, logos, letterheads and signatures. We'll put them all on custom Charisma modules for you.

Another big plus comes in networked printer applications because you can just set it and forget it. No more tray changes. No switching of cartridges. And 25Plus/Charisma works beautifully with all HP and compatible laser printers and all the leading software for almost any application.



Elite

BUSINESS APPLICATIONS, INC.
1-800-942-0018 □ 301-987-9050

Circle 113 on reader service card

all four programs are constrained by OS/2's 16MB RAM ceiling. The more memory each user requires, and the greater the amount of RAM required by the SQL server itself, the fewer users the server can handle. *SQL Server* and *SQLBase* have much lighter RAM requirements than Database Manager and *Oracle*.

IBM OS/2 Extended Edition 1.2's Database Manager

Extended Edition's Database Manager is the hardest to administer of the four servers. It's a real test of IBM loyalty: To use DOS workstations you have to run *IBM LAN Server 1.2*, which in turn demands that the file server be a PS/2. Worst of all, in two of three *PC World* tests, Database Manager was only half as fast as the other three products.

The only Database Manager front end available at this writing is another Extended Edition module, Query Manager. Its menu-driven Presentation Manager interface lets OS/2 users easily perform ad hoc queries, set up data entry screens, and run reports. This is the best dedicated front end of the group. IBM has no solution for DOS and *Windows* users, but at least most of the companies working on SQL front ends plan to support Database Manager.

Database Manager is installed as part of IBM's OS/2 Extended Edition 1.2 (it can't be run under earlier OS/2 versions or those from other vendors), and the many options and features call for careful preinstallation planning. The server needs a minimum of 9.5MB of RAM, plus an additional 150K for each workstation. Combined with the 16MB OS/2 RAM ceiling, that means Database Manager is limited to about 45 users.

Although Database Manager supports user groups, administration is difficult, because it's not completely centralized. The administrator must go to each workstation and manually enter configurations for each data base that the station needs to access—a waste of

EXECUTIVE SUMMARY

SQL Data Bases: Ready or Not

Data servers offer new capabilities—and new complexity.

SQL data base servers are faster and more reliable than conventional multi-user products, can handle larger data bases, and will soon let users access data using their favorite spreadsheet or DBMS. But programming a SQL data base server is currently so difficult that you should consider one only when your alternative is using a mini or a mainframe.

SQL Server is clearly the best of the four servers reviewed, but it's just too hard to use to merit a Best Buy. This difficulty should be reduced with the arrival of SQL versions of easy-to-use DBMS's like *Paradox* and *DataEase*, which promise to let nonprofessionals develop **SQL Server** applications.

	IBM OS/2 Extended Edition 1.2's Database Manager	Oracle Server for OS/2 1.0	SQLBase Server for OS/2 4.0.1	SQL Server 1.0
Compatibility	Poor	Good	Fair	Good
Administration	Fair	Fair	Poor	Good
Data security	Fair	Fair	Fair	Excellent
Programming	Fair	Fair	Fair	Good
Performance	Poor	Good	Good	Good
Ease of use	Poor	Poor	Poor	Fair
Overall value	Fair	Fair	Fair	Good
Reader service no.	665	666	667	668

How we rate SQL data base servers

We rate these servers based on information in the Features Evaluation table and the PC World Test Report, combined with our opinions of quality, reliability, ease of use, and user benefit.

Compatibility reflects the variety of user front ends available and under development for the server, LAN types supported, and flexibility of data import. An Excellent rating requires a query and report utility, front-end support by all major third-party developers, compatibility with all major LAN operating systems, and the ability to import delimited ASCII and graphics files.

Administration measures the strength of tools provided for data base administrators, including installation; management of users, groups, and tables; backup; auditing; monitoring; and data base compression. An Excellent rating requires comprehensive tools for all those tasks and the ability to back up active data bases.

Data security includes access rights, locks, referential integrity, and fault tolerance. To be rated Excellent, a server must have exclusive and shared locks; primary-key, foreign-key, and

business-rule referential integrity; and transaction rollback and roll-forward.

Programming measures the strength of tools provided for data base developers, including programming-language support, tool kits, debugging tools, and internal features like column delete and aliasing. To receive an Excellent rating, a program has to offer a simple interactive development environment in which to build, test, and debug applications.

Performance ratings compare the products' scores in the PC World Test Report. A server that exhibits superior performance in every test receives an Excellent rating.

Ease of use measures how intuitive and accessible a program is and applies to all the criteria. For an Excellent rating, a program must have logically named menu choices for all basic functions, and clear explanations of other important tasks must be easy to find in the program's on-line help.

Overall value takes into account the above criteria, plus reliability, capacity, and price.

time. You can't back up an active data base, and Data Manager lacks auditing and monitoring tools.

Database Manager's single advantage over the other products is its for-

eign-key referential integrity. Otherwise, Database Manager is the only server that lacks roll-forward, making it more likely to lose data after a system crash. During tests, a programming er-

UNCOMPLICATING SQL: EASY FRONT ENDS ARE THE PUZZLE'S FINAL PIECE

Roberta Furger

It's taken more than a year longer than anyone expected, but PC users can finally choose from a variety of familiar business applications that can function as front ends for SQL data base servers.

One reason for the wait is that each front end must be designed to hook to a specific server. You'd expect to be able to mix and match front ends and servers; after all, these are SQL servers, and all front ends hook to the servers by sending SQL commands. However, each server uses a slightly different version of SQL—which means, for example, that an upcoming edition of *Paradox* that works with Microsoft's SQL Server won't work with Gupta's SQLBase Server.

This complicated state of affairs means that the issue of which product works with what is vital to your server buying decision. Release dates were still slippery at press time, but the following represents the latest information on front-end support for various SQL servers.

Data Base Tools

The long-awaited SQL versions of big PC data bases are beginning to arrive, with one notable exception: Ashton-Tate's *dBASE Server Edition* has yet to ship, and officials at the Torrance, California, company aren't commenting on expected delivery dates.

Hoping to capitalize on *dBASE Server*'s long delay are Borland and DataEase. Both companies should be shipping SQL-ready products by the time you read this. Borland's *Paradox 3.5* (see the preview in this issue), together with its *SQL Link*, will access SQL Server, Oracle Server, and IBM Extended Edition's Database Manager. In its first release, *DataEase SQL* will support SQL Server; Database Manager and Ora-

cle Server support will follow (see *Product Outlook* in this issue).

SQL-fluent *Advanced Revelation 2.0* from Revelation Technologies should be out by now. Users will need to purchase separate modules depending on which server is installed: The SQL Server product will be available during the third quarter, with support for Oracle Server and Database Manager to follow by the end of the first quarter of 1991.

WordTech Systems was one of the first data base developers to offer access to SQL servers. Custom versions of its programs, *Oracle dBase* and *Oracle Quicksilver*, support Oracle Server. In addition, *Quicksilver SQL* from WordTech supports Gupta's SQLBase Server, and the company plans to support both Novell's NetWare SQL and Database Manager, although no delivery dates have been announced.

Nantucket Corporation and Fox Software both plan to include support for SQL data base servers in their *dBASE-compatible* products, but don't expect the hooks anytime soon. Nantucket expects to have drivers to link *Clipper 5.0* applications with SQL servers sometime during the first quarter of 1991. Fox Software will sell its own *FoxServer*, which *FoxPro* will support. With the release of *FoxPro 2.2* later this year, Fox will also offer a stand-alone compiler that will include specifications to allow third-party developers to write drivers linking *FoxPro* to other SQL servers.

Spreadsheet Links

Not everyone, however, wants or needs a relational data base. Many business users will feel more at home—and will find a more appropriate solution—using a spreadsheet to access SQL servers (see

"The Spreadsheet Connection: From Data Base to Decision," September 1990).

Microsoft provides the link via Excel using the *Q+E* add-in from Pioneer Software. The Windows version, which supports SQL Server, is available now; the OS/2 version will support SQL Server and Database Manager and is due out this month. Support for Oracle Server is slated for November.

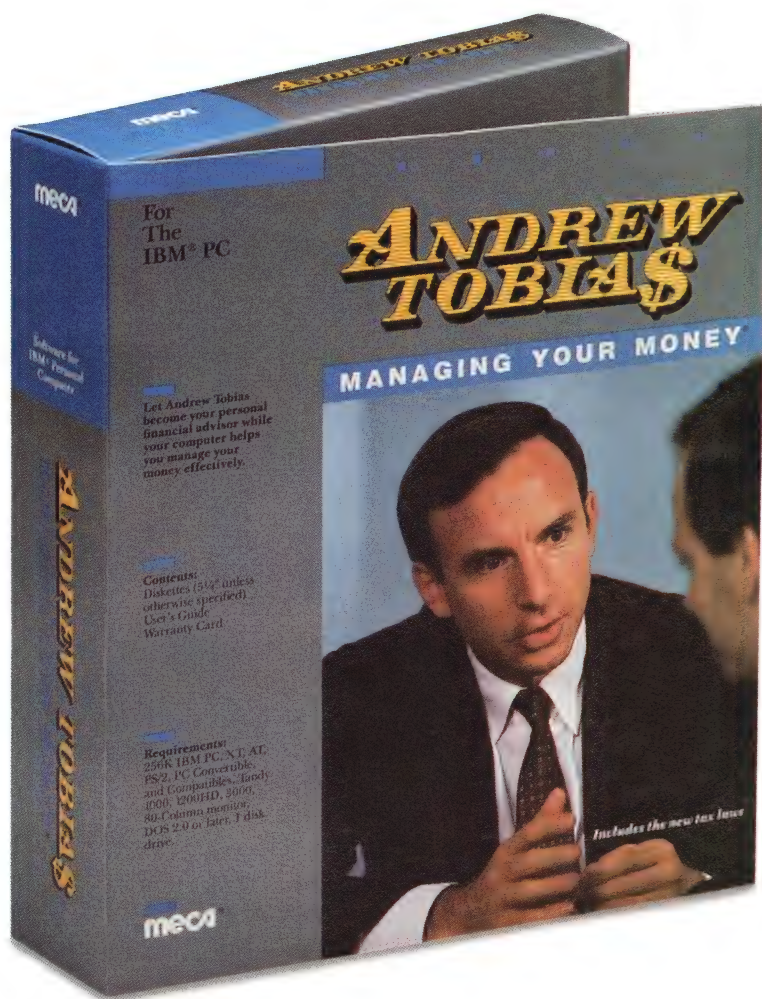
Users of 1-2-3 versions 2.01 and 2.2 gain access to SQL Server via *@SQL*, a Lotus add-in. 1-2-3 release 3 and higher includes support for external data bases within the base package, so users need only purchase the appropriate driver—from either Lotus or the data base server developer—to complete the link. A SQL Server driver is available now. Drivers for Oracle Server and Extended Edition will follow.

Developers are also introducing general-purpose querying tools, such as *SQL Commander*, a Windows and OS/2 application from Strategic Technologies Group. The company claims to offer point-and-click access to SQL data bases. Two servers are currently supported: SQLBase Server and SQL Server. *SQL Commander* supports DDE (Dynamic Data Exchange), so users can easily bring selected data into applications, such as word processors, that don't provide direct access to SQL server data.

Finally, a Choice

The recent flurry of activity from front-end developers is good news. As the final piece of the SQL data base server technology falls into place, users will be able to choose the front-end applications that best suit their needs.

FINANCIAL POWER MADE SIMPLE



Managing Your Money® gives you all the tools you need to make better financial decisions. Andrew Tobias will convince you that powerful software doesn't have to be hard to learn and use.

- ▶ Budgeting
- ▶ Check Writing
- ▶ Built-in CheckFree™ option for electronic bill paying through the Federal Reserve
- ▶ Tax Planning
- ▶ Financial Calculator: Mortgage, Retirement, College Planning, and more
- ▶ Insurance
- ▶ Loan Amortization
- ▶ Accounts Payable and Receivable, Excellent Business Features
- ▶ Portfolio Manager
- ▶ Net Worth Calculator

Why not explore the power and simplicity of Managing Your Money for yourself?

Just tear and mail the coupon below along with a check for \$5 today. Your Demonstration Kit, complete with an interactive Managing Your Money demo disk and **\$35** worth of money-saving coupons will be on its way to your home.

Now Over 500,000 Users!

"One of the best all-around programs ever written. It's easy to use even if you're a novice at computer technology and personal finance."

New York Daily News, "Money Talks"

"Nothing beats Managing Your Money."

PC Magazine

For 256K IBM® PC, XT, AT and compatibles. DOS 2.0 or later. 80-column monitor. At least one floppy drive.
128K Apple IIe, IIc, IIc Plus, IIGS. 80-column monitor. 2 disk drives. Macintosh Plus, SE, II. 2 disk drives, one at least 800K.
Available in 5.25" and 3.5" disks. Not copy protected.

© 1989 MECA • 327 Riverside Avenue • Westport, CT 06880



mecca

Yes. Let me try **Managing Your Money** for myself. I've enclosed a \$5 check for the Demonstration Kit made payable to

MECA

P.O. Box 907 • Westport, CT 06881.

Name _____

Address _____

City _____

State _____

Zip _____

() _____

PCW 10/90

Daytime Phone _____

Code _____

Please check **only one** of the following:

☐ IBM ☐ Apple ☐ MAC Version

I use ☐ 5.25" or ☐ 3.5" disks

Circle 118 on reader service card



REBATE!
Limited
time offer
50 cents
a megabyte

So, now that I have my PS/2®... How can I afford to enhance it?

Now CMS products are even more affordable. Buy a selected CMS Fixed Disk Drive or Tape Drive before December 15, 1990 and we'll send you a rebate of 50 cents per megabyte. CMS Enhancements offers a complete line of Fixed Disk Drives ranging from 20MB to our 1000MB for your PS/2. CMS also offers tape backup drives, memory expansion boards, external floppy drives and a variety of accessories. You simply will not find more ways to expand, upgrade, or enhance your genuine IBM® PS/2 computer. See your authorized CMS dealer for details, or call (714) 259-9555 for the dealer nearest you.

By saving with quality CMS products, you'll be able to get what you really need,
instead of worrying about what you can afford.

Your PS/2 Enhancement Solution is Obvious.



CMS
ENHANCEMENTS

1372 Valencia Avenue
Tustin, California 92680, U.S.A.
(714) 259-9555 • FAX (714) 549-4004

Circle 38 on reader service card

CMS is a registered trademark of CMS Enhancements, Inc. IBM and PS/2 are trademarks of IBM Corp.

ror (an attempt to fetch data from an unopened cursor) caused the server to crash, and the data base could not be recovered.

While the other data base servers allow programmers to work in DOS, Database Manager insists that they use an Extended Edition workstation. The program includes a procedural batch language, REXX; programs written in REXX are similar to *SQL Server's* server-based subroutines but not nearly as useful.

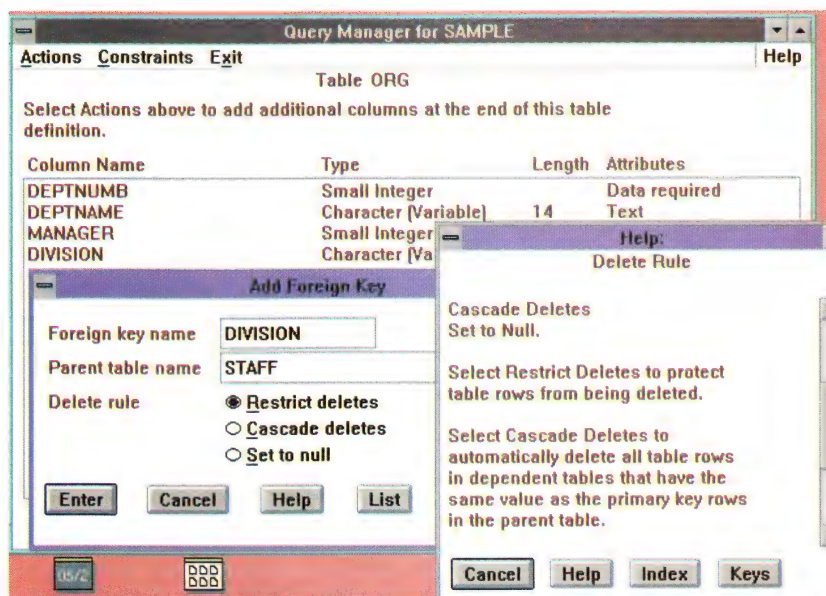
Database Manager's limited compatibility puts it out of the running for all but the staunchest IBM loyalists. Poor performance, clumsy administration, and the lack of roll-forward should further deter users.

Oracle Server for OS/2 1.0

Oracle Corporation was one of the first developers of SQL data base engines for minis and mainframes—and *Oracle Server for OS/2* shows its lineage. Its programming interface is crude, and because it lacks a query syntax optimizer, it requires careful attention to programming guidelines and time-consuming manual tuning. You may well need to employ the services of one of the company's many programmers, who can be hired to build, tune, and maintain data bases for users daunted by the product's complexity.

Oracle sells user query and reporting tools for DOS, *Windows*, and even Macintosh workstations, and most major players plan to supply front ends. *Oracle* also sells a variety of off-the-shelf financial and accounting software packages that include both data bases and custom front ends.

Oracle supports all major network operating systems, and it's the only product reviewed that can reroute queries to another server. It can send queries to two servers simultaneously to join tables; however, if one server commits and the other server can't complete the transaction, the data bases will be out of sync.



IBM OS/2 Extended Edition's Query Manager eases setting up a Database Manager data base. Here, a programmer sets up a foreign-key reference with a few simple menu choices.

Oracle requires 8MB of RAM, plus between 250K and 512K more for each logged-in workstation. Running with OS/2, the data base may not be able to handle more than 32 simultaneous users, since that operating system is limited to 16MB of RAM.

Despite a broad variety of administrative tools, *Oracle* comes up short on key features. You can't back up an active data base, and after a number of workstations crash, you must shut the server down and restart to clear the unfinished sessions. There are many utilities for performance monitoring and data base tuning, but there's also a preponderance of cryptic mainframe-style codes you have to decipher with a reference manual. The only way to add referential integrity for foreign keys is with a custom front end. That means you can't let users update data with third-party front ends unless you're willing to risk corrupting the data base. *Oracle* promises a future release that will include a procedural language enabling you to build foreign-key integrity into the server.

In *PC World's* benchmark tests, *Oracle* was very close to *SQL Server* in

overall performance. But in the real world, when the number of records fluctuates unpredictably and the number of users is not constant, *Oracle* will not provide consistent performance—unless you tune it continually.

Because *Oracle* doesn't optimize SQL queries automatically, the data base programmer must have a thorough knowledge of SQL; a slight change in syntax can dramatically alter performance. *Oracle* offers a precompiler for faster, easier programming, but it produces inefficient code: A benchmark written with it ran only half as fast as the benchmark used in the tests.

On the bright side, *Oracle* offers programmers the widest variety of tools. There are report writers, menu builders, and excellent CASE tools.

Oracle is extremely flexible but unreasonably complex. The most likely home for this product is in an office that's already running mini or mainframe versions of *Oracle*, enabling applications to be moved between large systems and the LAN. For the rest of the world, *Oracle Server for OS/2's* limited referential integrity, administrative problems, and mainframe-style

DATA BASE ALTERNATIVES: CLIENT-SERVER COMPUTING WITHOUT OS/2

Lincoln Spector

Although OS/2 is clearly the platform of choice among SQL data base server vendors, it's not the only game in town. Several servers are available on DOS or Novell's NetWare. Due to memory constraints, DOS-based servers can handle fewer simultaneous users before performance starts to degrade, but they may be a good, low-cost choice if you want to investigate client-server computing without committing yourself to OS/2. With its better memory management, NetWare should be a far more powerful platform, but it currently suffers from a lack of development support. Once there are more tools available for writing NetWare 386 client-server applications in the form of NetWare Loadable Modules (NLMs), NetWare-based servers may take off.

Many of these non-OS/2 servers aren't expected to compete head-to-head with the likes of IBM and Microsoft. Rather, they're designed to provide the vendors' installed base with a pathway to the client-server world and a way to improve performance at overloaded transaction-processing sites. Here are some contenders in the DOS and NetWare arenas:

NetWare SQL 2.10. Novell's *NetWare SQL* has been shipping since 1988 but has attracted scant front-end support compared with the OS/2 servers. Less sophisticated than the OS/2 servers, *NetWare SQL* is essentially a translator between SQL front ends and Novell's *Btrieve*, a non-SQL data base aimed at developers. The programs let both SQL and *Btrieve* front ends access the same data on NetWare LANs. Security, locking, and validation are done at the *Btrieve* level, but *NetWare SQL* currently

lacks referential integrity features. Front ends include Novell's *NetWare XQL* development package, Concentric Data's *R&R for SQL*, and a driver for 1-2-3 release 3. Promised for the future is support from *Advanced Revelation*, *Alpha Four*, *Paradox*, *Quicksilver*, and *dBXL*.

Informix-OnLine 4.0. A competitor with Oracle in the UNIX world, Informix is a late entry in the server wars. A NetWare 386 version of *Informix-OnLine*, a SQL data base server currently available on UNIX, is expected by the end of this year. Like *SQL Server*, *OnLine* can incorporate any type of data into a data base, enabling you to store scanned photos, formatted documents, or even sound recordings along with conventional data. Initially, front-end support will be limited to Informix's *Informix 4GL* data manager and the upcoming Windows version of its *Wingz* spreadsheet.

XDB-Server. Another UNIX migrant, XDB Systems' *XDB-Server* comes in NetWare and DOS versions, with an OS/2 entry on the way. Its main claim to fame is its strict DB2 SQL compatibility and the fact that its DOS version can run in as little as 400K. XDB's data manager, report writer, forms manager, and COBOL and C development tools all support *XDB-Server*, but *R&R for SQL* is its only major third-party front end.

Emerald Bay Database Server 2.1. If you have a *dBASE* shop, and you're not ready to switch to SQL, you might consider Ratliff Software's *Emerald Bay Database Server*, a *dBASE*-style server by Wayne Ratliff, the original author of *dBASE II*. DOS-based, it runs in 640K. Unlike standard *dBASE*, *Emerald Bay* combines multiple tables, indexes, validation, and security into a single file, making it possible for multiple programs to access the same data safely.

The few front ends available include Ratliff's 1-2-3 2.01 add-in, its *dBASE* clone and compiler, and its C and Pascal libraries, as well as Successware's *Clipper* library, *Clip2dB*.

Undoubtedly, more entries will appear, and more OS/2 servers may be on the way. Details are scarce about one longtime vaporware server, Microrim's *Vanguard*, but the project is still alive. Meanwhile, the momentum in data base servers is towards OS/2.

WHERE TO BUY

NetWare SQL 2.10

Novell Inc.
5918 W. Courtyard Dr.
Austin, TX 78730
800/733-9673
LIST PRICE: \$595

Reader service no. 670

Informix-OnLine 4.0

Informix Software, Inc.
4100 Bohannon Dr.
Menlo Park, CA 94025
415/926-6300, 415/926-6593 (fax)
LIST PRICE: for PC platforms \$1600-\$4400; NetWare version not yet priced

Reader service no. 671

XDB-Server

XDB Systems, Inc.
7309 Baltimore Ave. #220
College Park, MD 20740
301/779-6030, 301/779-4560 (fax back)
LIST PRICE: \$1995

Reader service no. 672

Emerald Bay Database Server 2.1

Ratliff Software Production, Inc.
2155 Verdugo Blvd. #20
Montrose, CA 91020
818/248-0877, 818/248-2605 (fax)
LIST PRICE: \$199-\$599, depending on number of users

Reader service no. 673

How many other computer dealers can measure up to the Quill advantages?

**WHO HITS
THE MARK?**

QUILL®

A
commit-
ment to
serving
the needs
of small
businesses
for over
34 years

Risk-free,
90-day
guarantee
of your
complete
satisfac-
tion

Top-notch
support
staff to
answer
your
questions
and make
your
purchase
easy

Superior
"we care"
customer
service

Prices
that can
save you
hundreds
of dollars

Con-
venient
24-hours-
a-day fax
ordering

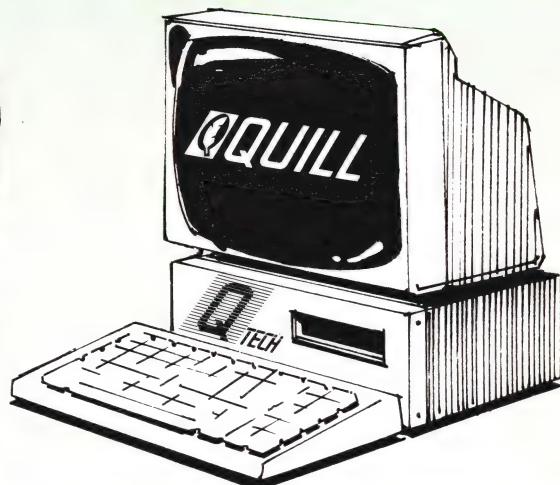
PW90338-G2



**ONE BIG ADVANTAGE...
LOW PRICES! NOW 286 POWER
COSTS LESS THAN \$900!**

**COMPLETE
SYSTEMS
INCLUDING
MONO MONITOR
START AT ONLY**

899⁸⁸ each



PLUS

- ✓ FREE ON-SITE SERVICE
- ✓ FREE PHONE TECH SUPPORT
- ✓ SPEEDY TO-YOUR-DOOR DELIVERY
- ✓ EASY PAYMENT PLANS
- ✓ HUGE INVENTORY OF PC SUPPLIES, TOO

THESE ARE JUST A FEW OF THE OTHER GREAT VALUES WE OFFER:

SYSTEMS

Q-TECH®—XT-12 with mono monitor and 20MB hard drive \$874.88
Q-TECH®—386-SX with VGA monitor and 40MB hard drive \$1929.88

PRINTERS

PANASONIC—KXP-1180 9-pin dot matrix \$189.98
EPSON—LX-810 9-pin dot matrix \$199.98
Q-TECH®—Q-Laser 6 page per minute HP II compat. laser printer \$1098.88

MONITORS

SAMSUNG—MA-2565 12" amber monochrome, TTL \$89.98
SAMSUNG—CJ-4681 14" color VGA \$379.99

SOFTWARE

WORD PERFECT—Version 5.1 \$269.98
PC TOOLS—Version 6.0 \$98.88

ACCESSORIES

LOGITECH TRACKMAN—Trackball Mouse, serial version \$89.99
LOGITECH MOUSE—C9 Mouse, serial or bus version \$89.99
HONEYWELL KEYBOARD—101-key, enhanced AT style \$49.99

On the yardstick of experience, no one else comes close to Quill! We're committed to serving customers like you. Call or write for your FREE Quill computer catalog and find out why we're head and shoulders above the rest!

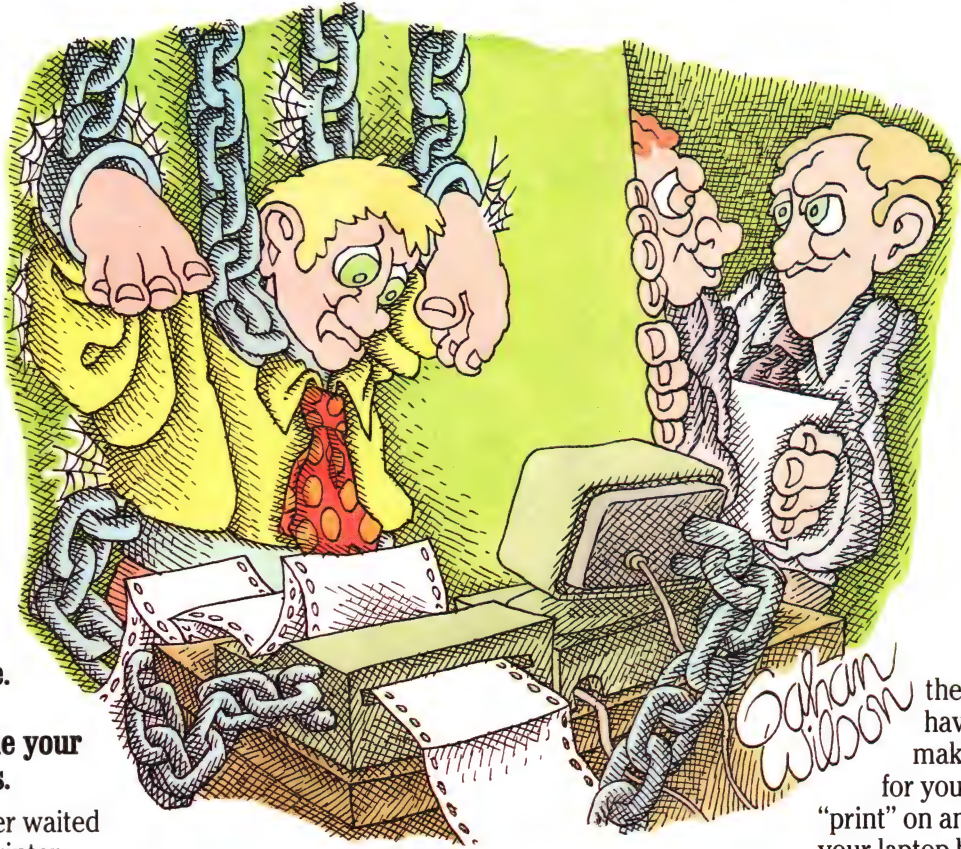
CALL TODAY: 1-708-634-6650

QUILL CORP. • 100 Scheller Rd. • P.O. Box 4700 • Lincolnshire, IL 60197-4700

We accept Visa and MasterCard



Still hanging around, waiting for your spreadsheets to print?



Get P.D.Queue. And keep on working while your printer prints.

If you've ever waited idly for your printer to finish a spreadsheet, then here's a product that's been worth hanging around for.

P.D.Queue is the add-in print spooler for all kinds of printing with 1-2-3 and Symphony. Including Allways and Sideways® printing.

With P.D.Queue, you get back control of your computer seconds after starting a printout. Without waiting for your printer. Without doing anything different.

Just print as usual in 1-2-3, Symphony, Sideways, Allways, or any other add-in, and P.D.Queue takes over automatically. Sending your files to your hard disk—which takes just seconds—instead of to your printer—which could take minutes. While you're back at work, P.D.Queue takes care of printing for you. Silently, in the background.

In fact, you can queue up and manage up to 99 different print jobs at once. Change the order they're printed in. Cancel, pause, restart or postpone any of

"Obviously Fenwick hasn't discovered P.D.Queue yet."

And P.D.Queue is a genuine Lotus add-in. So it's perfectly compatible with 1-2-3 and Symphony. Right down to the familiar Lotus-like menus.

So if spreadsheet printing is hanging you up, let P.D.Queue set you free.

P.D.Queue is just \$89.95 at your software dealer, or direct from Funk Software.



them. Print once and have P.D.Queue make multiple copies for you. You can even "print" on an airplane, take your laptop back to the office printer, and let P.D.Queue generate your printouts.

P.D.Queue™

To order call 1-800-822-3865, ext. 228
(617-497-6339 in MA).

**FUNK
SOFTWARE**

Funk Software, 222 Third Street, Cambridge, MA 02142

Requires Lotus 1-2-3 Release 2.0, 2.01 or 2.2, or Symphony Release 1.1 or higher. Works while in 1-2-3, Symphony or any add-in.
© 1990 Funk Software, Inc. P.D.Queue and Sideways are trademarks of Funk Software, Inc. Lotus, 1-2-3, Symphony and Allways are trademarks of Lotus Development Corp.

Circle 60 on reader service card

programming interface make it less appealing than *SQL Server*.

SQLBase Server for OS/2 4.0.1

SQLBase Server is hard to use, poorly documented, and a bit slower than *SQL Server* and *Oracle*. Worst of all, it's buggy.

SQLBase crashed often during *PC World* tests. In an application that used *SQLBase*'s Context Preservation feature to speed repeat queries, the server crashed when two users attempted to lock the same record. In that case we were able to recover the data, and Gupta provided a work-around to avoid a recurrence. But when we set the transaction log file to a specific size and issued a rollback command, and again when we accidentally relocated *SQLBase*'s transaction log file without shutting down first, the data base was corrupted beyond recovery. Such serious bugs are unfortunate in a program intended for critical applications.

SQLBase has the least third-party support of the servers reviewed; at this writing, you can access *SQLBase* with either *1-2-3* or *Excel* using third-party utilities resold by Gupta. In any case, *SQLBase*'s lack of foreign-key data integrity limits its usefulness in environments with a variety of front ends.

SQLBase works with all major network operating systems, including NetWare, *LAN Manager*, Banyan VINES, and any NETBIOS-based LAN. Gupta sells a gateway to allow access to IBM DB2 mainframe data bases and has announced a gateway to Oracle servers.

Installation is complicated by the scattering of instructions through several sets of release notes, and one small but essential piece of information had to be obtained from the company's phone support staff. RAM requirements are surprisingly light: only 4MB, plus 3K for each logged-in user.

There's one crucial feature missing from *SQLBase*'s administrative tools. You can't assign users to groups for efficient management, so access rights have

to be laboriously set for each user.

Gupta offers programmers a good selection of tools for both C programming and building screens with *Windows*. It's the only product reviewed that lets you delete a column—good for modifying tables rather than rebuilding them from scratch. *SQLBase* can store SQL code on the server; but unlike with *SQL Server*, you can't create server-based subroutines.

The bugs we encountered during testing are sufficient reason to avoid *SQLBase*. On top of that, it's hard to administer; referential integrity is limited, and the major third-party players have yet to get behind it. It's the least attractive choice of the four servers reviewed.

SQL Server 1.0

SQL Server is the fastest, most powerful, easiest to use, and most flexible of the four servers. Its superior data security features make it the best at juggling a mix of front ends. It also has the strongest support from third-party front-end developers.

SQL Server can communicate not only with *LAN Manager* but with any other OS/2 program, which should help developers create new work-group soft-

ware. *SQL Server* is also compatible with NetWare and can run data bases developed on Sybase's minicomputer data base systems with little or no recoding.

Like *Oracle*, *SQL Server* requires 8MB of RAM—but its small 42K requirement for each logged-in workstation means it's clearly capable of handling many more simultaneous users than Database Manager or *Oracle*. The only network installation tips in the manual relate to *LAN Manager*; NetWare users have to fend for themselves.

You can administer *SQL Server* from the server or from any DOS or OS/2 workstation. The administrator can create and manage user groups, back up and restore data bases and log files, modify the system configuration, and build and test server-based subroutines. A library of 53 useful subroutines is included with the product.

SQL Server offers administrators several attractive advantages. You can back up a data base without shutting the server down, and data base files are automatically compressed as rows are deleted. Real-time monitoring tools to view system, user, and data base activity aren't as thorough as *Oracle*'s (though they're much easier to understand). Though *SQL Server* lacks built-

POWER TIP NO. 135

Norton MCI From Anywhere

Norton Commander 3.0 users can write MCI Mail with any word processor, as long as the letter starts with the following:

Via: 1

To: MCI mailbox

Subject: subject

After the letter is complete, save it as an ASCII file in *Commander's* OUT directory, and it will be sent out the next time *Commander* logs on to MCI. If you wish to attach a binary file, insert the line **Attach:** drive:\path\filename between the 'To' and 'Subject' lines.

Lincoln Spector

Assistant Editor

in auditing tools, programmers can write server-based subroutines to log data base and user activity.

The other servers can't match *SQL Server's* data integrity features. You can build in both foreign-key referential integrity and, unique among the products reviewed, *business rules*. For example, you can prevent a user from deleting a customer record when the customer has open invoices. This type of control helps keep security from being compromised when users with SQL versions of spreadsheets or data bases access the data base.

SQL Server was the overall top performer in *PC World* tests. The scores reflect a significant improvement gained by limiting the server to a maximum of 26 user connections, the number actually required for the tests.

The product's server-based subroutines make it the most powerful tool for professional developers. Since it can be programmed in BASIC and includes a thorough tutorial, *SQL Server* is the only product that could conceivably be programmed by a nonprofessional.

SQL Server's simplicity of operation, superior data security, powerful programming options, and good overall performance bring it closest to fulfilling the SQL server promise. Add to this the

flurry of third-party development, and *SQL Server* is by far the best bet among the products reviewed.

Ready to Serve?

Even *SQL Server*, clearly the top product in the roundup, has a way to go before setup will be anything less than a hair-raising adventure. Originally, Ashton-Tate and Microsoft teamed up to create a solution that combined both *SQL Server* and a SQL version of *dBASE IV*. With that front end on indefinite hold, however, developing data base applications with *SQL Server* is more like coding a mini or mainframe data base than setting up a custom PC front end.

Whether or not you want to wait until front ends make banging out SQL code unnecessary, the promise of SQL data base server technology is real. Once all the pieces are in place, the combination of mainframe power and PC flexibility will make SQL servers the data management solution of choice. ●

Tyler Band is a data base consultant for Vanguard Business Solutions in Sausalito, California. Roberta Furger is an associate editor and Lincoln Spector an assistant editor for PC World.

POWER TIP NO. 140

Easy On-Line Reminders

If you can't always remember short but complex procedures and command sequences (printer setup codes and the like), jog your memory with brief, on-line ASCII how-to files created with your editor or word processor. Format the files so that they're easily readable in a single screen. Give them names you'll have no trouble remembering, and store them in a directory called C:\HELP. Then add a batch file called HELP.BAT, which contains the line **type c:\help\%1**, to your batch file directory, which should be in the PATH statement in your AUTOEXEC.BAT file. When you need assistance, use the DOS command **help filename** to get an instant refresher course.

Wanda Smith
Rockville, Maryland

WHERE TO BUY

IBM OS/2 Extended Edition 1.2's Data-Base Manager

IBM
Old Orchard Rd.
Armonk, NY 10504
800/426-2468
LIST PRICE: first copy \$830, each additional one \$620; set of Data-base Manager manuals \$222
REQUIREMENTS: 8.4MB RAM, plus 1.1MB per data base and 150K per user; 20MB disk space
TECHNICAL SUPPORT: toll-free number, M-F 7-7 (\$360 per user per year) or 24 hours,

7 days a week (\$384)
OTHER SUPPORT: newsletter, videotapes, training
Reader service no. 665

Oracle Server for OS/2 1.0

Oracle Corp.
500 Oracle Pkwy.
Redwood Shores, CA 94065
800/345-3267
LIST PRICE: \$3699;
Oracle Tools for OS/2 \$799; CASE for OS/2 \$9999
REQUIREMENTS: OS/2 1.1 or later

version, 8MB RAM, plus 250K-512K per user; 20MB disk space
TECHNICAL SUPPORT: 30 days free, \$1000 per year thereafter; toll-free number, 24 hours, 7 days a week
OTHER SUPPORT: newsletter, Compu-Serve, training, upgrade subscriptions
Reader service no. 666

SQLBase Server for OS/2 4.0.1

Gupta Technologies, Inc.
1040 Marsh Rd.
Menlo Park, CA 94025
800/876-3267,

415/321-5471 (fax)
LIST PRICE: \$2495; Excel and 1-2-3 add-ins \$295 each; C tool kit \$495; Windows tool kit \$1295, run-time licenses \$150-\$300; COBOL tool kit \$995; DB2 gateways \$30,000-\$50,000 each
REQUIREMENTS: OS/2 1.0 or later version; 4MB RAM, plus 3K per user; 10MB disk space
TECHNICAL SUPPORT: toll number, M-F 6-6
OTHER SUPPORT: BBS,

newsletter, training
Reader service no. 667

SQL Server 1.0

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-6399
206/882-8080
LIST PRICE: \$2495
REQUIREMENTS: OS/2 1.0 or later version; 8MB RAM, plus 42K per user; 30MB disk space
TECHNICAL SUPPORT: toll number, M-F 7-5
OTHER SUPPORT: BBS, magazine, user group, CompuServe, training
Reader service no. 668

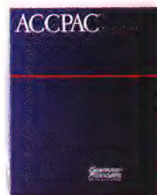
You Take Care Of Business.



Introducing the accounting software that does just what you need it to do.

Everything.

ACCPAC® accounting software was designed specifically



for businesses like yours—so you can spend less time balancing your books and more time

building your business.

No matter what you need to do—send an invoice, pay a bill, write a paycheck—ACCPAC provides a quick and simple way to do it. And it's so easy to learn you'll have it up and running in minutes.

At the same time, the ACCPAC family offers more advanced and comprehensive accounting packages that your company can easily upgrade to as your business grows.



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

That's why today, ACCPAC is the best-selling accounting software in the U.S. and Canada. All kinds of businesses in every type of industry trust their books to ACCPAC.

So should you.

Ask for ACCPAC BEDFORD®, ACCPAC BPI® and ACCPAC® PLUS at your local software dealer or call 1-800-531-5236.

And then take care of business. We'll take care of your books.



We'll Take Care Of Your Books.

ACCPAC BEDFORD INTEGRATED ACCOUNTING, ACCPAC BPI and ACCPAC PLUS run on PC/DOS.
1990 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787

Circle 39 on reader service card

Add Flair!

CORELDRAW!

Add flair to your newsletters, reports, brochures, presentations and other documents — quickly and easily — with CorelDRAW!

Whether you need a headline for your newsletter, a technical diagram, a new logo or a splashy invitation to your next promotion... CorelDRAW will help you add impact, interest and flair.

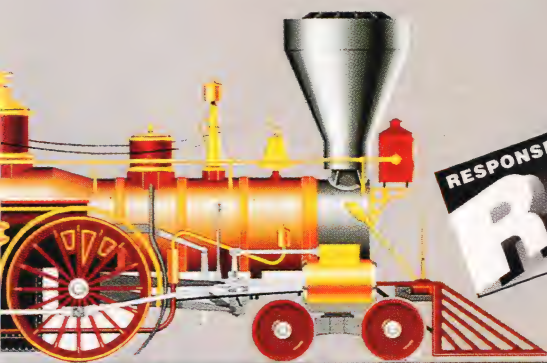
CorelDRAW is the ideal PC graphics package. Right from the start, you can create dramatic effects with text and images. Change colors, rotate, stretch, fit text to a path, kern letters on-screen, edit letter shapes or use a calligraphic pen. The possibilities are endless and exciting.

Running under Microsoft Windows 2.0 and 3.0, CorelDRAW is compatible with packages such as PageMaker, MS Word, and Excel. And extensive import/export options make file transfer easy.

CorelDRAW is value-packed... you get over 100 fonts, 6 megabytes of clipart, a PANTONE color license and the WFNBOSS font conversion utility, which exports fonts to typeface editors and imports fonts from Adobe, Compugraphic, Bitstream and other major vendors. CorelTRACE is an amazing new batch autotracing program that converts bitmapped images to smooth vector art, and it's included free!

So add a wild headline, design a logo or create a masterpiece... it's easy with CorelDRAW!

**Windows 3.0 and OS/2
versions available!**



Call Corel now for information on the
CorelDRAW International Design Contest!



COREL
Tel: (613) 728-8200 / Fax: (613) 728-9790
1600 Carling Avenue, Ottawa, Ontario, K1Z 8R7

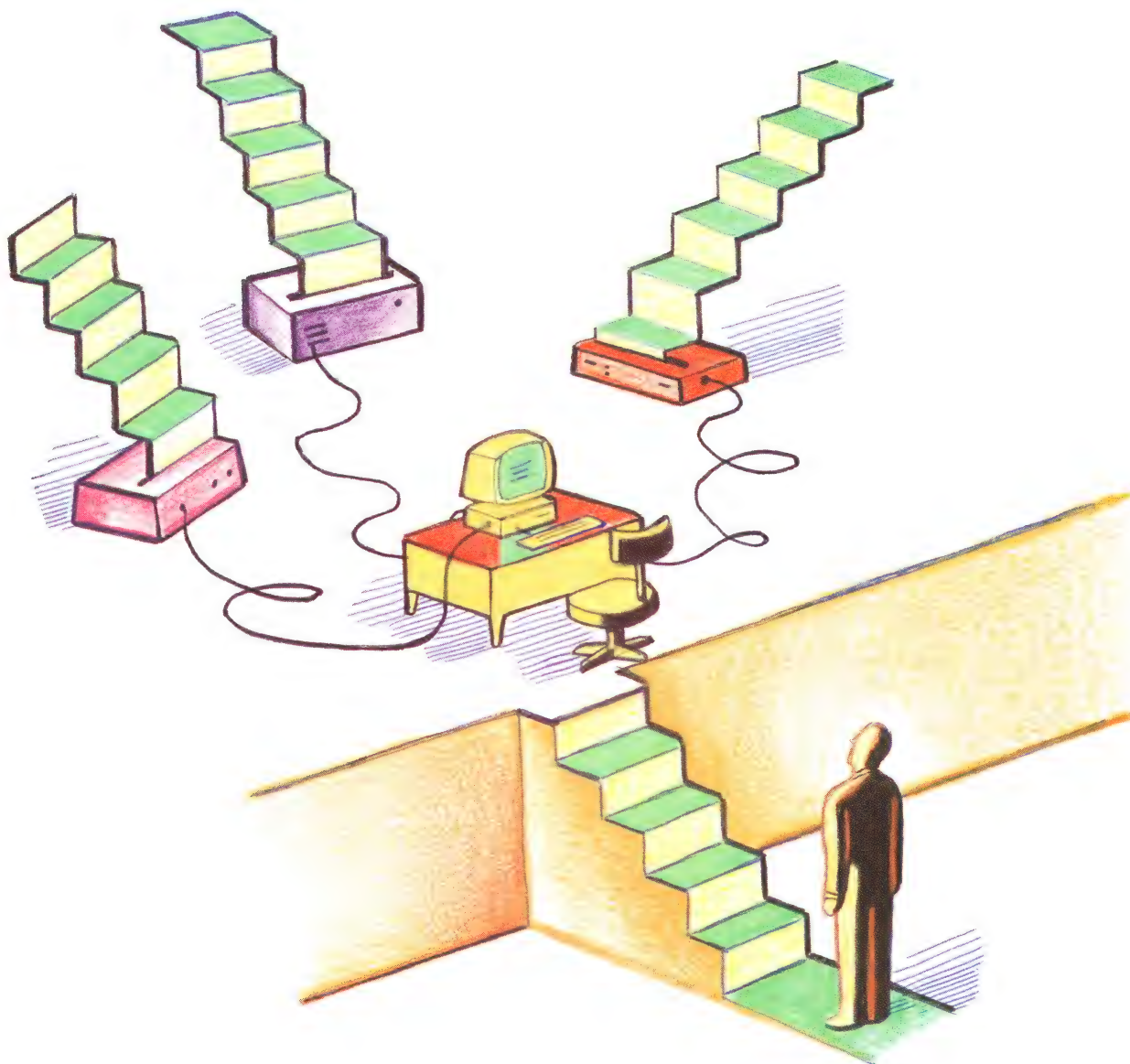


Circle 48 on reader service card

Printer Power: NetWare Pop-Up Utilities

Do you need to serve an entire network with a handful of printers? These simple utilities can help. But only Best Buy LANSpool does it without taking a big bite of precious RAM.

David M. Syme



With the latest versions of Novell's NetWare, printing on a LAN has never been easier. You can check on the progress of your print job, switch network printers, delete jobs from the print queue, access special fonts and print effects, and much more.

The new utilities that come with NetWare even provide peer-to-peer printer sharing, which means that you no longer have to tie a printer to the server or waste a PC as a dedicated print server—instead you can send jobs to any networked PC with a printer attached. And with peer-to-peer printing, you can pick up your print job (or clear a paper jam) by stepping across the aisle to the printer at your neighbor's desk rather than hiking down the hall (see the sidebar "Print Server: NetWare 286 Provides Peer-to-Peer Printer Sharing at Last").

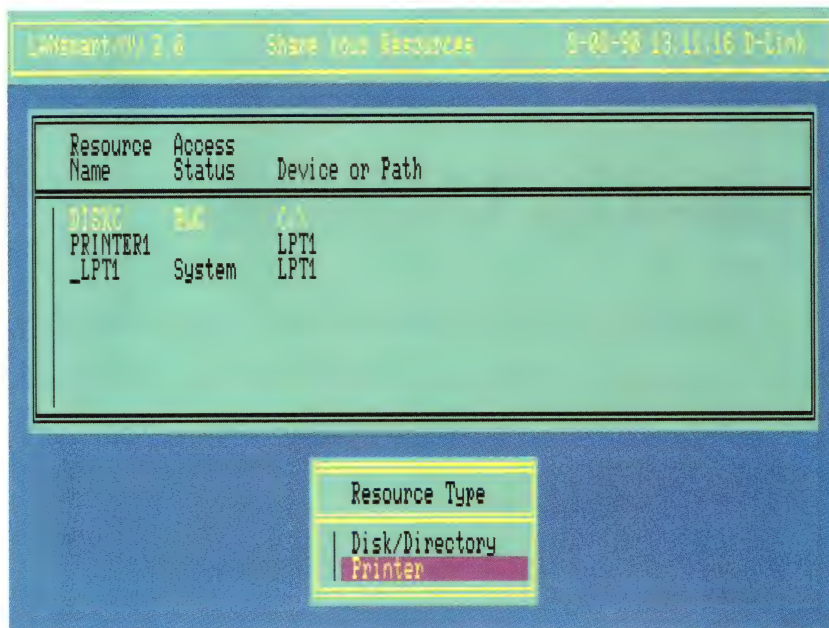
Unfortunately, NetWare's printer utilities lack a critical feature: They aren't RAM resident. That means if you need to switch printers or reconfigure the one you're using, you have to exit your application to load the appropriate utility.

Nor is that the only problem. NetWare 2.15's print utilities are slow, and they're tough to install. And NetWare users with versions older than 2.15 must upgrade to get peer-to-peer printer power.

Fortunately, a growing number of third-party vendors are providing reliable RAM-resident, NetWare-compatible utilities that let you perform most important printer-related tasks quickly and easily from within applications—and give you peer-to-peer printer sharing as well.

Share and Share Alike

All the products reviewed here deliver peer-to-peer printer sharing. With that as a given, the key buying issues become printer control features and queue management. Other important considerations include RAM consumption, price, ease of use, and performance.



LANsmart/NV is more than just a printer utility: It's a peer-to-peer network operating system that lets you share files as well as printers. As this screen shows, you use a simple point-and-shoot menu to select resources to be shared.

Printer Control All these utilities can be set up in memory-resident mode so that you can select printers, configure them, and print to them from within applications. Key capabilities include notification that a print job is done and the abilities to change printers and to send a message asking the user at the

All these packages let you manipulate jobs from within an application—a critical ability.

local print station to change the paper in the printer. Only *LANSpool* and *PS-Print* have all these features. The ability to change print characteristics (like formfeeds or banners) on a job-by-job basis from within applications is also highly desirable.

Queue Management The ability to view and manipulate print jobs from within an application is critical, and all

these packages provide it. It's important to be able to delete jobs, reorder jobs in the queue, and hold jobs for later printing; only *LANSpool* and *PS-Print* can handle all three.

RAM Consumption Since most LAN workstations start off with at least some RAM tied up in network drivers and shells, low RAM consumption is essential for a memory-resident printer utility. Merely setting up your PC as a non-printing workstation (so you can print on remote printers) can cost between 4K and 160K; if you want to make your PC a print station (so your printer is available to the network), you can expect to sacrifice anywhere from 6K to 191K of PC memory. Since RAM-hungry utilities may keep you from running powerful applications such as *Ventura* or even large spreadsheets, the smaller the utility's appetite for memory, the better.

Ease of Use All these utilities can be installed by menu-driven routines, but those routines vary quite a bit. For instance, *LANSpool* requires that you bring down the LAN before installation, and *Printer Assist* requires a two-byte patch to NetWare to be fully functional.

Performance Printer utilities have little effect on actual print speed, but since printing occurs in the background, they can disrupt normal PC operations. Hence, "good performance" in this context means minimal slowdown of normal computing operations while someone else is using the printer that is attached to your computer. We did informal tests to compare performance degradation caused by these products on print station PCs, and we found that although the level varies, disruption is seldom severe.

LANsmart/NV 2.0

LANsmart/NV provides peer-to-peer file sharing along with printer sharing—the only program reviewed here to do so. This capability adds virtually all the peer-to-peer features of a network operating system like TOPS to NetWare's already powerful talents. Unfortunately, LANsmart's \$595 price is the highest in the roundup, its other powers are severely limited, the RAM overhead is steep, and it's the only product that won't operate across network bridges.

Printer control is one of the program's weakest areas. You can switch printers from within an application, but that's about it. LANsmart cannot tell you your file was printed or send messages to users at local print stations instructing them to change paper trays. Nor does it provide RAM-resident printer configuration.

LANsmart/NV includes a pop-up queue manager, but it's fairly limited. You can delete print jobs and move one job to the top of the list, but that's all. Moreover, LANsmart/NV's memory problems are the worst in the roundup. You must give up 59K merely to access shared printers; add pop-up queue control, and you lose a total of 160K. Setting up your PC as a print station consumes 90K; add the pop-up menus and a primitive E-mail mode, and you'll sacrifice a humongous 191K. (You can save RAM, though, by loading some components in

FEATURES EVALUATION

LANSpool: A Powerful Pop-Up

LANSpool wins the Best Buy among NetWare print utilities, thanks to outstanding print controls and queue management features, plus amazingly low RAM overhead.

	LANsmart/NV2.0	LANSpool 2.0	PS-Print 2.3	Q Assist 4.0 Printer Assist 3.0
Standard features				
List price per server	\$595	\$395	\$395	\$328 ¹
Compatibility				
ELS I (2.0a)	☐	☒	☐	☒
ELS II (2.1x)	☒	☒	☒	☒
NetWare 2.0a	☐	☒	☐	☒
NetWare 2.1x	☒	☒	☒	☒
NetWare 3.x	☒	☒	☐	☒
LAN bridges	☐	☒	☒	☒
Printer configuration and control				
Change print server	☒	☒	☒	☒
Print configuration	☐	☒	☒	☒
Predefined print forms	☐	☒	☒	☐
Print form modification	☐	☒	☒	☐
Verifies successful print	☐	☒	☒	☐
Requests print operator to change paper	☐	☒	☒	☐
Usage log	☐	☒	☐	☒
Queue management				
Delete job	☒	☒	☒	☒
Move job to top of list	☒	☒	☒	☐
Reorder jobs	☐	☒	☒	☐
Hold and release job	☒	☒	☒	☐
Predetermined release time	☐	☒	☐	☐
Priority print queues	☐	☒	☒	☒
RAM consumption				
Printer station ²	191K	6K	57.5K	24K
Workstation ²	160K	4K	25K	19K

¹ Combined price; Printer Assist is \$179, Q Assist \$149.

² Assumes full feature set is installed.

extended or expanded memory.)

Nor is this product easy to set up. Menu-driven installation may be quite confusing if you're not familiar with NetWare basics—and the documentation won't be much help for a novice. Fortunately, things ease up once the

system is installed: Well-designed menus and clear, context-sensitive on-line help make daily use a snap.

On the bright side, LANsmart/NV hardly degrades PC performance at all; as long as the print station has a hard disk (for print spooling), slowdown dur-

ing print jobs is almost unnoticeable. If the print station can spool to a RAM disk, the slowdown is imperceptible.

Nonetheless, *LANsmart/NV* is simply too expensive, RAM hungry, and feature poor for most users. It makes sense only if you must have peer-to-peer file sharing.

LANSpool 2.0



At \$395, LANSystems' *LANSpool 2.0*, *PC World's Best Buy*, is quite reasonably priced.

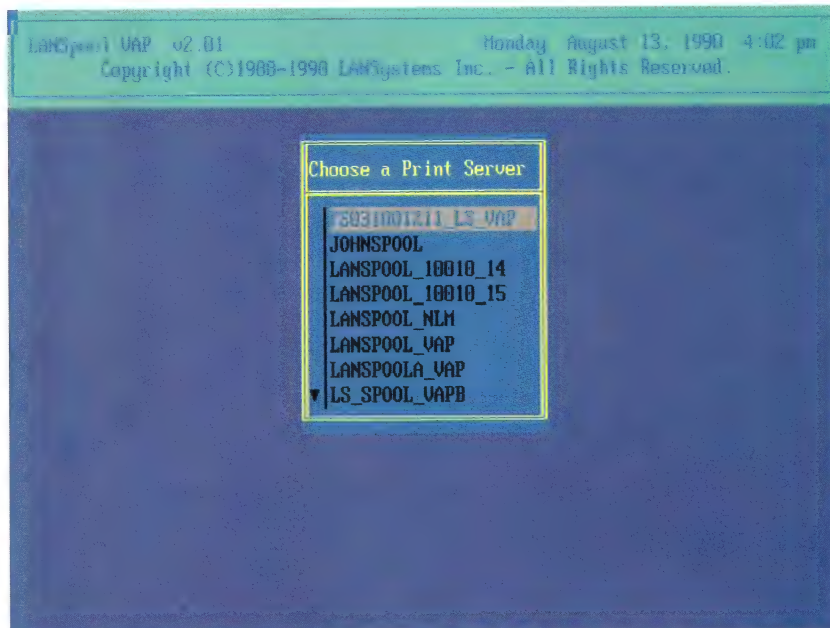
Better yet, it offers superb printer control and queue management. Best of all, it does everything in a tiny amount of RAM.

LANSpool delivers printer control via pop-up access to NetWare's unsurpassed utilities, *Printcon* and *Printdef*. In addition, *LANSpool* sends you a message when a job is done printing and lets you notify a print operator to swap paper trays by sending automatic pop-up screen messages for various kinds of print jobs.

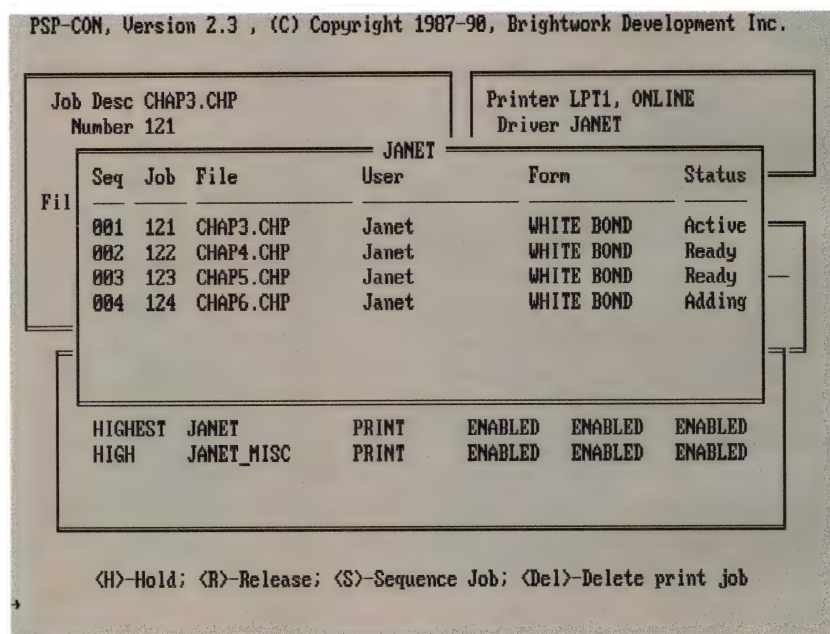
LANSpool offers superb printer control and queue management.

Similarly, you get full-featured RAM-resident queue management via a pop-up window to NetWare's *Pconsole*. *LANSpool* adds a proprietary utility called *Status* that lets you know whether the printer is on line, printing, or holding jobs. And unlike NetWare *Print Server*, *Status* lets you check on the printer before the job is sent instead of afterward.

LANSpool boasts the lowest memory use of the roundup. Workstations sacrifice no RAM at all for access to peer-to-peer printing and lose only 4K if they load pop-up TSRs. The print station module takes up a mere 2K (6K if you



LANSystems' *LANSpool*, *PC World's Best Buy*, gives you access to NetWare's own queue and printer control utilities, but popped up in a window so you needn't leave your application to use them. Here, *LANSpool's* own menu lets you choose a print server.



Brightwork's *PS-Print* has excellent pop-up queue and printer control. The queue-handling screen shown permits print jobs to be held, released, deleted, and moved higher or lower in the queue.

want pop-up utilities).

LANSpool also delivers excellent performance; little degradation occurs on print stations.

Installing *LANSpool* is painless; the only problem is that you have to turn off

the net to do it. Using it is just as easy. Its interface is not only powerful, it's elegant. A pop-up window lets you choose between *LANPrint*, *Pconsole*, and *Status*, and it provides access to Novell's own on-line help. Documenta-

tion is step-by-step specific.

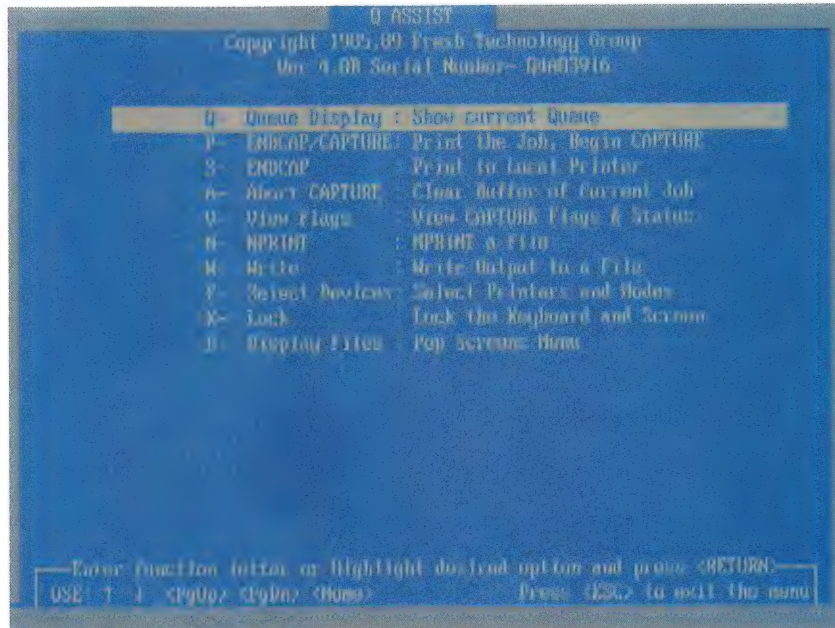
LANSpool 2.0 is a real standout, thanks to its low RAM use, outstanding printer control, full-featured queue management, and reasonable price. If you're in the market for a network print manager, you can't do better than this.

PS-Print 2.3

Brightwork's *PS-Print* (\$395) comes with *Queue-It*, a pop-up utility that allows users to choose different network printers and access font and paper controls via NetWare's Capture command—all from within applications.

Printer control is excellent: All important features are supported, including verification of completed print jobs. Not only can you set up *PS-Print* to notify the user at the print station to change settings, paper, and so on; if he or she doesn't jump to it within 10 seconds, you'll be notified so you can hold the print job.

Queue management is excellent too; this utility boasts a menu-driven interface and a full-featured set of queue controls that are roughly as powerful as



Among other things, Q Assist's pop-up menu lets you select printers and display the jobs in the print queue—but you can't change the order of the jobs in the queue.

those of NetWare's Pconsole. The only fly in the ointment is that your system must be set up as a print station before you can access the queue controls.

RAM usage isn't exorbitant, but it's not insignificant either. Workstations

must devote between 12K and 25K to accessing remote printers; to make your PC a print station (and gain RAM-resident queue management capability), you'll have to give up 57K of perfectly good RAM.

PS-Print is fairly easy to install and use. There's no on-screen help, but most of its menu-driven operations are so straightforward you may not miss it. And the documentation is quite good.

PS-Print's performance is adequate but somewhat inferior to *LANsmart*'s and *LANSpool*'s. If your PC is set up as a print station you may notice a slow-down in performance during heavy print traffic or when someone is printing graphics.

PS-Print's strong printer controls, easy installation, and reasonable RAM usage are attractive features. However, the program's merely adequate performance and restricted access to RAM-resident queue management will probably send smart buyers elsewhere.

A new version of *PS-Print*, 3.1, was released as we went to press. It includes many handy new features, supports *NetWare 386*, and (best of all) uses less memory in print server mode—34K in-

PRINT SERVER: NETWARE 286 PROVIDES PEER-TO-PEER PRINTER SHARING AT LAST

NetWare 386, Novell's new high-end network operating system, caused quite a stir by providing peer-to-peer printer sharing as a standard feature. This feature is also available for 286-based NetWare LANs, thanks to a utility called Print Server that's shipping as part of NetWare 2.15, the latest version.

Print Server takes up only 9K of RAM on print stations (PCs to which a printer is attached) and uses no RAM at all on workstations (networked PCs without printers). And it includes several handy features: For instance, if a network printer is off line, out of

paper, or jammed, Print Server will send specified users a screen message giving a detailed description of the problem.

Unfortunately, Print Server's silver lining has a few clouds. For one thing, installation is difficult. For another, the documentation is disk based and lacks an index or a detailed table of contents. And, of course, it's not memory resident, so if users need to change printers, modify queues, or reconfigure printers, they'll have to exit the application they're using. —D. M. S.

stead of 57K. However, *PS-Print*'s primary problem, restricted queue access, remains unaddressed.

Q Assist 4.0 and Printer Assist 3.0

Together (for a combined price of \$328), *Q Assist* and *Printer Assist* provide many useful network printing features, use very little RAM, and are the only utilities reviewed that work with NetWare ELS I version 2.0a and NetWare 2.0a. However, their printer control and queue management features are limited, and printer configuration is a lot less friendly than with other products.

Printer Assist makes reports on printer usage and gives you the handy ability to assign priorities to print jobs so longer ones go last. However, a number of key control features are not supported, including notification of print completion and automatic messages to print operators.

Q Assist is the pop-up queue manager. Its easy-to-use interface is much like *Pconsole*'s, but its functionality doesn't come close. For example, you can't change the order of print jobs in the queue, and you can't hold a job for printing at a later time.

Printer Assist's appetite for RAM is quite low: It uses no RAM at all on workstations and only 5K on print stations. *Q Assist* is similarly restrained in its RAM use—only 19K per workstation or print station.

Installation routines may be too difficult for nontechnies: For *Printer Assist*, you have to patch NetWare to give local users the right to delete other users' files from the local print queue. Nor does ease of use improve significantly once installation is complete. *Printer Assist*'s printer setup and configuration manager is surprisingly clumsy. Instead of selecting predefined printer control codes from a menu, users must enter Escape sequences from scratch—a tedious and confusing task.

And there's more bad news. If you're using an EGA or VGA display in graph-

EXECUTIVE SUMMARY

Easy Access to Network Printers

Third-party, NetWare-compatible printing utilities provide power that NetWare's own utilities lack.

NetWare 286 didn't win its popularity on the strength of its command-line printing utilities. These third-party NetWare-compatible products not only add peer-to-peer printer sharing but let you access network printers and print queues from inside your applications via pop-up windows.



LANSystems' **LANSpool** earns a Best Buy thanks to its superb printer controls, low RAM consumption, reasonable price, and outstanding ease of use. D-Link Systems' **LANsmart/NV** provides peer-to-peer file sharing—but its \$595 list price is a lot steeper than the competition's.

	LANsmart/NV 2.0	LANSpool 2.0	PS-Print 2.3	Q Assist 4.0/ Printer Assist 3.0
Printer control	Poor	Excellent	Excellent	Fair
Queue management	Good	Excellent	Excellent	Fair
RAM consumption	Poor	Excellent	Fair	Good
Ease of use	Poor	Excellent	Good	Poor
Performance	Excellent	Excellent	Good	Good
Overall value	Fair	Excellent	Good	Fair
		BEST BUY		
Reader service no.	605	606	607	608

How we rate NetWare printer utilities

Since all these printer utilities provide peer-to-peer printer sharing, the most important features to look for are powerful printer control capabilities, flexible queue management, and low RAM consumption. Other handy features include good performance (that is, minimal disruption of normal computing operations while your PC is functioning as a print station) and easy access to these features via simple pop-up menus.

Printer control includes the ability to change printers, configure them, and control them. In order to be rated Excellent, a utility must provide pop-up printer selection and pop-up notification when a print job is complete and when the user at the local printer should change paper.

Queue management refers to the ability to view and manipulate jobs in the queue from within an application. A rating of Excellent is awarded only if the utility lets an authorized user delete files from the queue, reorder jobs,

and hold jobs for later printing.

RAM consumption refers to the amount of RAM these utilities use in print station mode (which requires more RAM than workstation mode). A utility must consume 15K or less in print station mode to be rated Excellent.

Ease of use concerns both installation and daily use. For an Excellent rating, we require menu-driven installation; clear, context-sensitive on-screen help; step-by-step ("type this and you'll see that") documentation; and an intuitive menu-driven interface.

Performance refers to the slowdown you'll experience doing work if your PC is set up as a print station and someone else is accessing your printer. This assessment is based on informal tests, which revealed that even at the worst, slowdown is negligible.

Overall value combines the above criteria, plus price.

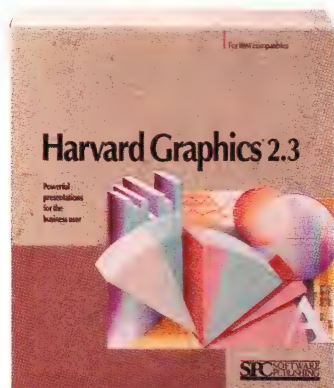
ics mode (as with *Windows*), popping up and then unpoping *Q Assist*'s control menu can result in an unreadable screen. Given the growing interest in Microsoft's recent release of *Windows 3.0*, this is a serious problem.

Printer Assist's performance is acceptable; the PC print station slows down only slightly when graphics are being printed.

Printer Assist and *Q Assist* are easy on RAM, but their lack of key features



MAKE YOUR NEXT
DOG AND PONY SHOW
EVEN BETTER.
EVEN FASTER.



INTRODUCING NEW
HARVARD
GRAPHICS® 2.3

Harvard Graphics 2.3 from Software Publishing Corporation is packed with new features for even more effective presentations.

For starters, we've added a gallery of pre-designed charts. Pick one that looks good, enter your data, and there's your chart, with the colors and layout you'd expect from a graphics professional.

We've also fully integrated Draw Partner,™ our advanced drawing package, so you can modify your chart with tools like rotate, skew and zoom—without losing the tie to your charting

data. What's more, you can build a whole new type of ScreenShow®—HyperShow.™ Create hot buttons in any chart for instant access to backup information. And tailor the flow of your presentation as you give it.

Harvard Graphics has always been the quickest way to great-looking presentations. That's why it's the best-selling business graphics software. Now, you can do more than ever. Faster than ever.

SPC SOFTWARE
PUBLISHING
CORPORATION

FOR UPGRADE INFORMATION, CALL 1-303-799-4900. FOR A FREE DEMO DISK, CALL 1-800-345-2888, OPERATOR 305.

For upgrade information in Canada, call 1-416-566-0566. Harvard Graphics is a registered trademark of Software Publishing Corporation. Draw Partner, ScreenShow and HyperShow are trademarks of Software Publishing Corporation. ©1990 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210

NETWORK PRINTING BASICS: HOW NETWARE MINDS PCs AND QUEUES

If you have only one network printer on your NetWare LAN, printing is fairly straightforward. You set up your application to print to your PC's default port (usually LPT1:), and NetWare redirects the print job to a holding area on the server's hard disk called a print queue. There it waits its turn with other print jobs until it prints out on the network printer.

When you add more network printers, however, printing can get a lot more complicated in a hurry. You'll probably have multiple print queues, and users will need to route print jobs to the right queue. This is a task few software applications can handle by themselves. NetWare provides the Capture command so users can do this job, as well as set parameters like formfeeds, banner pages,

and so on. This system works very well—but you have to get to the DOS command line to issue a Capture command.

NetWare also provides three more command-line utilities. Printdef and Printcon let you choose various Capture options and save those settings. In addition, these handy utilities allow users to select a driver from Novell's list of 30 printers and modify it to use various combinations of fonts and paper sizes—all by making selections from a menu.

Print Server, NetWare's newest print utility, provides peer-to-peer printer sharing, allowing users to choose a printer attached to any networked PC, not just printers attached to the server (see the sidebar "Print Server: NetWare 286 Provides Peer-to-Peer Printer Sharing at Last").

Once you've chosen your printer and print queue, you'll still need to modify that queue now and then—either to delete a print job (that 100-page annual report, for instance, that you've sent in error), move your print job to the top of the queue, or check to see how many jobs are ahead of yours. To do this, you'll use NetWare's Pconsole utility. Like all its brothers, it's easy to use—but it must be started from the command line.

For the most part, NetWare's print utilities are well designed and rich in features. However, the fact that they can't be used from within an application (as pop-up TSRs) is a major drawback. This is why many users are turning to third-party pop-up utilities. —D. M. S.

(not to mention erratic graphics compatibility) and their clumsy printer manager knock them out of the running.

Pop Up and Get Down

LAN printing utilities have to cover a lot of territory, so it's a treat to discover a program like Best Buy *LANSpool* that succeeds so well in covering all the

bases—full-featured pop-up printer control and queue management, good performance, low RAM consumption—at a relatively low price. Until Novell adds RAM residence (plus better speed, easier installation, better documentation, and greater reliability) to NetWare printer utilities, this well-designed utility from LANSystems will constitute

the state of the art. ☉

David M. Syme is a LAN consultant with Marathon Micro, an Alamo, California, network consulting firm.

For more information about all products in this article, circle reader service no. 901.

WHERE TO BUY

LANsmart/NV 2.0

D-Link Systems, Inc.
5 Musick
Irvine, CA 92718
714/455-1688,
714/455-2521 (fax)
LIST PRICE: \$595 per
server
REQUIREMENTS:
640K; one floppy drive
(hard drive for each
print server); DOS 3.1
or later version; Net-
Ware 2.1x, 3.x, or ELS
II 2.1x
TECHNICAL SUPPORT:
toll number, M-F 8-5

OTHER SUPPORT:

company BBS
Reader service no. 605

LANSpool 2.0

LANSystems Inc.
300 Park Ave. S
New York, NY 10010
800/458-5267,
212/995-8604 (fax)
LIST PRICE: \$395 per
server
REQUIREMENTS:
384K; one floppy
drive; DOS 3.0 or
later; NetWare 2.1x,
3.x, or ELS II 2.1x

TECHNICAL SUPPORT:
toll-free number, M-F
9-7:30

OTHER SUPPORT:
none

Reader service no. 606

PS-Print 2.3

Brightwork
Development
766 Shrewsbury Ave.
Tinton Falls, NJ 07724
800/552-9876,
201/530-0622 (fax)
LIST PRICE: \$395 per
server
REQUIREMENTS:

384K, one floppy
drive, DOS 3.1 or later
version, NetWare 2.1x
or ELS II 2.1x
TECHNICAL SUPPORT:
toll number, M-F 9-7
OTHER SUPPORT:
newsletter
Reader service no. 607

Q Assist 4.0, Printer Assist 3.0

Fresh Technology
Group
1478 North Tech Blvd.
#101
Gilbert, AZ 85234

602/497-4200,
602/497-4242 (fax)
LIST PRICE: Printer
Assist \$179 per server,
Q Assist \$149 per
server
REQUIREMENTS:
384K, DOS 2.0 or
later version, NetWare
2.0 or later version
TECHNICAL SUPPORT:
toll number, M-F 8-5
OTHER SUPPORT:
none

Reader service no. 608



We are in an industry of clones. Where by definition every product must be virtually identical to be compatible.

The components inside, chips and peripherals alike, are manufactured by giants like Intel, Seagate, and Chips & Technology. The true owners of today's PC technologies. Open up an IBM® or COMPAQ® and you'll find those same names again and again.

So in an industry where products are all alike, packagings of industry standard components, where do you find the difference?

It is in each supplier's philosophy and commitment to you.

At PC Brand, our mission is simple: To select the highest performance, highest quality components that Intel, Seagate and other top manufacturers produce, and configure them in the widest possible variety to your exact specifications. Into our family of PC Brand Systems.

To marry your system solutions with the most comprehensive service and support programs in the industry.

Our mission is to do all this and still sell you your system at an outstanding price. It is exactly this commitment to manufacture satisfied clients which sets us apart from the competition, which will let us become the next IBM.

Join The PC Brand Family

For starters, one of the widest choices of casing options in the industry today...giving you total flexibility.

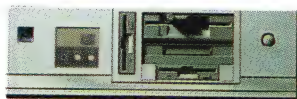
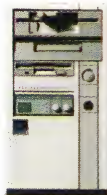


Slimline

Neat, compact, attractive and versatile; our Slimline desktop case offers the ideal solution for the executive's desk where both footprint and appearance are important, or the entry station where space is at a premium.

Mini Tower

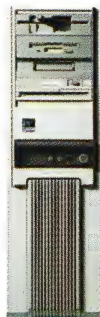
This attractively designed case is just the answer for those applications requiring more drives or I/O slot configurability than our Slimline, but a smaller footprint than our desktop.



Desk Top

Our full sized desk top case integrates all the lessons learned in the past 5 years of PC history: full 8 slot I/O, 6 drive bays, and a 200 watt PS/2 style compact power supply. Truly the first of an entirely new generation of desk top cases.

Server Multi-User Tower



Specifically designed for LAN and other multi terminal applications, our Server Multi-User Tower case features larger size, cable routing facilities, enhanced power supply, extra cooling, and push button security.

PC Brand Offers a Full Range Of Computer Systems

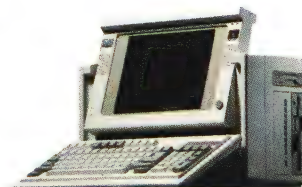
Name Brand Peripherals at the Lowest Prices

Volume Purchase Discounts

Toll-Free Service & Support

5-Year Warranty

30-Day Money Back Guarantee



Portable PC-III

A revolutionary, "take-it-anywhere" casing option that puts the power of any of our 286 or 386 desktop systems in a portable package-with no compromise on performance or flexibility.

1-800-PC BRAND

TEL: 1-800-722-7263 FAX: 1-800-722-7392

PC Brand, Inc. 954 W. Washington St., Chicago, IL 60607
International Fax #312-633-2888 International Voice #312-226-5200. We are open Mon. thru Fri.: 7am to 7pm; Sat.: 8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage. MasterCard, Checks and Approved P.O.s are Accepted. Prices and specifications subject to change.



WOR 8-10

Entry Level

Not everyone needs a 386.

If your application calls for data entry, word processing, or general business support, a low cost entry level system can be an ideal solution.

But the latest versions of the industry's software standards like Lotus 3.0, Windows 3.0, Microsoft Word and dBase IV need more processor speed and memory than most 8088/86 entry level machines can muster.

Starting at only \$599 for a true 16MHz 286, supporting up to 16Mb of RAM and over 200Mb of hard disk storage, *PC Brand truly redefines entry level computing.*

Now even the most complex software packages perform with the speed necessary to support the most demanding user.

You get all this plus our exclusive 5-year limited warranty and the most comprehensive toll-free service and support package in the industry.

PC Brand 286/16



286/16 \$599

16 MHz Clock,
Zero Wait Operation,
Norton SI 19.0
Landmark™ Speed 20.6MHz,
512K RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports



286/20 \$699

20 MHz Clock,
Zero Wait Operation,
Norton SI 23.0
Landmark™ Speed 26.7MHz,
512K RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports

Standard Features:

- 80286-16, 80286-20 operating at 16MHz, or 20MHz w/ZeroWait
- 512K RAM expandable to 8MB on the System board using 256K or 1MB RAM
- 1.2MB 5.25" or 1.44MB 3.5" Diskette Drive
- FCC Class "A", Intended for business use
- High performance 16bit VGA Cards with optional 1024x768 capability on all VGA Systems
- 1:1 Interleaved Hard/Floppy Drive Controller, 1Mb/Second disk transfer rates on all 40Mb drives or larger
- Enhanced 101-key Click/Tactile Keyboard
- 2 Serial & 1 Parallel ports
- High Capacity System Power supply
- Real Time Clock/Calendar with 5 Year Battery
- 80287 Co-Processor Support
- AMI BIOS w/full MS/DOS, OS/2, XENIX, UNIX, NOVELL, 3COM and PCNET compatibility
- Built-in System Board LIM 4.0EMS hardware

- User configurable I/O timing permitting compatible operation with older peripherals or faster I/O for newer devices
- 7 Slot motherboard design (6 16Bit & 1 8Bit)
- Medium foot print case with 6 Disk Drive bays

Options:

- Low profile Slim Line Case with 3 Disk Drive bays
- Mini Size desk top Tower* Case with 4 Disk Drive bays
- VGA Plasma Portable Case
- Factory Installed RAM Upgrades
- Custom configurations with Name Brand peripherals of your choice

PC BRAND 286's

Add the following amounts to the base configuration prices shown above

Hard Drives: MB/MS	20/40	40/25	71/25	130/19	200/19
Mono	\$450	\$520	\$660	\$770	\$1269
VGA-Mono	\$609	\$679	\$819	\$929	\$1428
VGA-Color	\$860	\$930	\$1070	\$1180	\$1679
SVGA-Color*	\$940	\$1010	\$1150	\$1260	\$1759
Portable VGA	NA	\$2440	NA	\$2690	\$3189

* SVGA 1024 x 768 interlaced

*Tower is a registered trademark of NCR Corp.

TRW-National computer Maintenance Services-Free on-site service for 386SX, 386DX*, and 486's for customers located within a 100 mile radius of any of over 200 TRW service centers. On site service for 286's available at extra cost. Call for details.



Redefined.

THIS ISSUE!
NEW LOWER PRICES!
EXTENDED SALES AND TECH
SUPPORT HOURS!

"Not only does the system perform, look good
and has competitive pricing, but it also has
the "number-one" rated mail-order service
and organization behind it. How can you go
wrong?"

-Computer Monthly, PC Brand 286

From **\$599**

1-800-PCBRAND

TEL: 1-800-722-7263 FAX: 1-800-722-7392

PC Brand, Inc. 954 W. Washington St., Chicago, IL 60607
International Fax #312-633-2888 International Voice #312-226-5200. We are
open Mon. thru Fri.: 7am to 7pm; Saturday: 8am to 4pm Central Time.
MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks &
Approved P.O.s Accepted. Prices & specifications subject to change.



WOR 8-10

Circle 198 on reader service card

The Work

Our 386 intermediate systems (the "Workhorses" as we call them) earn their way into your office and onto your desktop through remarkable price and performance.

Designed to meet the complex and demanding workload of today's business environment, they work for a living performing full time applications like Accounting, Desktop Publishing, Data Bases and Local Area Networks with ease.

At an outstanding \$799 for a 386SX, or an even more unbelievable \$1299 for a full fledged 386DX 25MHz processor, these units will pay for themselves in no time!

Combine this with On-Site Service by TRW[†], toll free technical support, custom configurations and other user care programs unheard of in the industry, and your choice is clear-PC Brand.

386SX's From \$799



386/SX-16 \$799

16 MHz Clock,
Zero Wait Operation
Norton SI 18.7
Landmark™ 18.3MHz,
512K RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports



386/SX-20 \$999

20 MHz Clock,
Zero Wait Operation
Norton SI 23.0
Landmark™ 25.3MHz,
512K RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports

Standard Features:**

- 80386SX Processor Operating at 16 or 20MHz delivering 18 or 22.5MHz Effective Throughput
- 512K RAM expandable to 8MB on the System board using 256K and/or 1MB RAM
- 1.2MB 5.25" or 1.44MB 3.5" Diskette Drive
- FCC Class "A", Intended for business use
- High performance 16bit VGA Cards with optional 1024x768 capability on all VGA Systems
- 1:1 Interleaved Hard/Floppy Drive controllers, 1 Mb/Second disk transfer rates on all 40Mb drives or larger
- Enhanced 101-key Click/Tactile Keyboard
- 2 Serial & 1 Parallel ports
- High Capacity 200Watt System Power Supply
- Real Time Clock/Calendar with 5 Year Battery
- 80387SX Co-Processor Support
- AMI BIOS with full MS/DOS, OS/2, XENIX, UNIX, NOVELL, 3COM compatibility
- 8 Slot motherboard design (5 16Bit & 3 8Bit)
- Medium foot print case with 6 Disk Drive bays

Options:

- Low profile Slim Line Case with 3 Disk Drive bays
- Mini Size desk top Tower® Case with 4 Disk Drive bays
- VGA Plasma Portable Case
- Factory Installed RAM Upgrades
- Custom configurations with Name Brand peripherals of your Choice

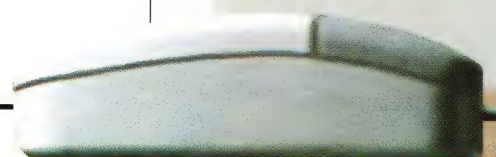
PC BRAND 386/SX's

Add the following amounts to the base configuration prices shown above

Hard Drives: MB/MS	20/40	40/25	71/25	130/19	200/19
Mono	\$450	\$520	\$660	\$770	\$1269
VGA-Mono	\$609	\$679	\$819	\$929	\$1428
VGA-Color	\$860	\$930	\$1070	\$1180	\$1679
SVGA-Color*	\$940	\$1010	\$1150	\$1260	\$1759
Portable VGA	NA	\$2440	NA	\$2690	\$3189

* SVGA 1024 x 768 interlaced

**Tower is a registered trademark of NCR Corp.



[†]TRW-National Computer Maintenance Services-Free on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200 TRW service centers. On site service for 286's available at extra cost. Call for details

Horses.

THIS ISSUE!
NEW LOWER PRICES!
EXTENDED SALES AND TECH
SUPPORT HOURS!

"Faster Than A Speeding Bullet"

-Computer Shopper, Cover Story

"The Best Low Cost Alternative Around!"

-PC Magazine, 25MHz 386PC's

"The Biggest Bargain In Personal Computing"

-Computer Buyer's Guide, Cover Story

386/25-\$1299

386/25 \$1299

25 MHz Clock,
Zero Wait Operation,
Norton SI28.2
Landmark™ Speed 33.6MHz,
1024K RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports

Standard Features:

- True 25MHz Intel 80386 CPU Operating with Zero Wait States
- 1024K RAM standard expandable to 16MB using 256K and/or 1MB RAM
- 1.2MB 5.25" or 1.44MB 3.5" Diskette Drive
- FCC Class "A", Intended for business use
- High performance 16bit VGA Cards with optional 1024x768 capability on all VGA Systems
- 1:1Interleaving Hard Drive Floppy Drive controllers, 1Mb/Second disk transfer rates on all standard Drives
- Enhanced 101-key Click/Tactile Keyboard
- 2 serial & 1 parallel ports
- High Capacity 200Watt System Power Supply

- Real Time Clock/Calendar with 5 Year Battery
- 80287, 80387, or Weitek Co-Processor Support
- AMI BIOS with full MS/DOS, OS/2, XENIX, UNIX, NOVELL, 3COM compatibility
- 8 Slot motherboard design (5 16Bit & 3 8Bit)
- Medium foot print case with 6 Disk Drive bays

Options:

- Low profile Slim-Line Case with 3 Disk bays
- Full Size Tower® Case with 8 Disk Drive bays
- Mini Size Tower® Case with 4 Disk Drive bays
- VGA Plasma Portable Case
- Custom configurations with Name Brand peripherals of your choice

PC BRAND 386/25

Add the following amount to the base configuration price shown above

Hard Drives: MB/MS	40/25	71/25	130/19	200/19	320/16	640/15
Mono	\$520	\$660	\$770	\$1269	\$1870	\$2660
VGA-Mono	\$679	\$819	\$929	\$1428	\$2029	\$2819
VGA-Color	\$930	\$1070	\$1180	\$1679	\$2280	\$3070
SVGA-Color*	\$1010	\$1150	\$1260	\$1759	\$2360	\$3150
Portable VGA	\$2640	NA	\$2890	\$3389	NA	NA

* SVGA 1024 x 768 interlaced

1-800-PCBRAND

TEL: 1-800-722-7263 FAX: 1-800-722-7392

PC Brand, Inc. 954 W. Washington St., Chicago, IL 60607
International Fax #312-633-2888 International Voice #312-226-5200. We are open Mon. thru Fri.: 7am to 7pm; Sat.: 8am to 4 pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks & Approved P.O.s Accepted. Prices & specifications subject to change. WOR 8-10

*Tower is a registered trademark of NCR Corp.



†TRW-National Computer Maintenance Services-Free on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200 TRW service centers. On site service for 286's available at extra cost. Call for details

Circle 198 on reader service card

Pure

Whether used as large scale file servers, CAD CAM workstations, UNIX hosts or statistical simulation engines these machines are guaranteed to satisfy even the hungriest "power applications"-truly mainframes on a desktop.

And like all PC Brand systems, they do it at an unbelievable price! Our 386/25 Cache starts at only \$1499 while the top of the line 486's begin at just \$3699.

486's From \$3699



486/25 \$3699

25 MHz Clock,
Zero Wait Operation
Landmark™ 113.6MHz,
4MB RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports

486/33 CALL

33 MHz Clock,
Zero Wait Operation
Landmark™ 149.9MHz,
4MB RAM,
1.2MB or 1.44MB Drive,
101-Keyboards,
2 Serial and 1 Parallel Ports

Standard Features:

- True 25 or 33 MHz INTEL 80486 CPU operating at Zero Wait States
- 4MB RAM standard expandable to 16 MB
- Built-in 8K 4-way set associative cache
- Built-in INTEL 487 Numeric Coprocessor
- FCC Class "A", Intended for business use
- High performance 16bit VGA Cards with optional 1024x768 capability on all VGA systems
- 1.2MB 5.25" or 1.44MB 3.5" Diskette Drive
- 1:1 Interleaving Hard Drive Floppy Drive Controllers, 1 Mb/Second disk transfer rates on all standard Drives
- Enhanced 101-key Click/Tactile Keyboard
- I/O Ports-2 serial, 1 parallel
- High Capacity 200Watt System Power Supply

- 7 Slot motherboard design with one 32bit proprietary Zero Wait States Slot
- AMI BIOS with MS/DOS, OS/2, XENIX, UNIX, NOVELL, 3COM compatibility
- Medium foot print case w/6 Disk Drive bays
- On Board NiCAD Battery

Options:

- Low profile Slim-Line Case with 3 Disk bays
- Full Size Tower® Case with 8 Disk Drive Bays
- Mini Size Tower® Case with 4 Disk Drive bays
- VGA Plasma Portable Case
- 128K Cache upgrade board with Weitek coprocessor socket **
- Factory Installed RAM Upgrades
- Custom configurations w/ Name Brand peripherals of your choice

PC BRAND 486's

Add the following amount to the base configuration price shown above

Hard Drives: MB/MS	71/25	130/19	200/19	320/16	640/15
Mono	\$660	\$770	\$1269	\$1870	\$2660
VGA-Mono	\$819	\$929	\$1428	\$2029	\$2819
VGA-Color	\$1070	\$1180	\$1679	\$2280	\$3070
SVGA-Color*	\$1150	\$1260	\$1759	\$2360	\$3150

* SVGA 1024 x 768 interlaced

® Tower is a registered trademark of NCR Corp.

** Not available in Slim-Line or Portable Case



Power.

THIS ISSUE!
NEW LOWER PRICES!
EXTENDED SALES AND TECH
SUPPORT HOURS!

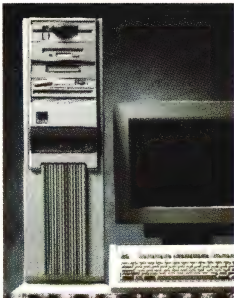
If you like, PC Brand can configure and install NOVELL, UNIX and other complex hardware/software combinations at the factory to your exact specifications, taking complete responsibility for putting these products to work.



**"...Flawless
Compatibility,
Lowest Price"**

-InfoWorld, Product Review

386 Cache From \$1499



386/25 \$1499

25 MHz Clock,
Zero Wait Operation
Norton SI 31.6
Landmark™ 43.5MHz,
1024K RAM,
1.2MB or 1.44MB Drive,
101-KeyBoard,
2 Serial and 1 Parallel Ports

386/33 \$1999

33 MHz Clock,
Zero Wait Operation
Norton SI 45.9
Landmark™ 58.7MHz,
1024K RAM,
1.2MB or 1.44MB Drive,
101-KeyBoard,
2 Serial and 1 Parallel Ports

Standard Features:

- True 25 or 33MHz INTEL 80386 CPU operating w/Zero Wait States with 43.5 or 58.7 MHz Effective Throughput
- Intel 82385 Cache Processor with 32K 25NS Static RAM Standard
- 1024K RAM Standard Expandable to 16MB
- FCC Class "A", Intended for business use
- High performance 16bit VGA Cards with optional 1024x768 capability
- 1.2MB 5.25" or 1.44MB 3.5" Diskette Drive
- 1:1 Interleaving Hard Drive Floppy Drive Controllers, 1 Mb/Second disk transfer rates on all standard drives
- Enhanced 101-key Click/Tactile Keyboard
- I/O Ports-2 serial, 1 parallel
- High Capacity 200Watt System Power Supply

- Real Time Clock/Calendar with 5 Year Battery
- 80387 or Weitek CoProcessor support
- Phoenix BIOS with Full MS DOS, OS/2, XENIX, UNIX, NOVELL, 3COM compatibility
- EMS and Disk Cache in ROM
- 8 Slot motherboard design
- Medium foot print case w/6 Disk Drive bays

Options:

- Full size Tower* Case w/8 Disk Drive bays
- Low Profile Slim Line Case w/3 Disk bays
- Mini Sized Tower* Case w/4 Disk Drive bays
- Custom configurations w/ Name Brand peripherals of your choice
- Factory Installed Ram Upgrades

PC BRAND 386 Cache

Add the following amount to the base configuration price shown above

Hard Drives: MB/MS	40/25	71/25	130/19	200/19	320/16	640/15
Mono	\$520	\$660	\$770	\$1269	\$1870	\$2660
VGA-Mono	\$679	\$819	\$929	\$1428	\$2029	\$2819
VGA-Color	\$930	\$1070	\$1180	\$1679	\$2280	\$3070
SVGA-Color*	\$1010	\$1150	\$1260	\$1759	\$2360	\$3150
Portable VGA	\$2640	NA	\$2890	\$3389	NA	NA

* SVGA 1024 x 768 interlaced

*Tower is a registered trademark of NCR Corp.

Power Packages

**Preconfigured PCBrand
386 & 486 Systems Include:**

- 4MB RAM
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drive
- 130MB 19ms Hard Drive w/caching controller
- 16 Bit VGA w/512 K
- 14" 1024 x 768 Super VGA Color Monitor
- 101 Key Keyboard
- High Resolution Mouse

386/25 \$2904
w/ 32K cpu cache add \$200

386/33 \$3604
includes 32K cpu cache

486/25 \$5034

1-800-PC BRAND

TEL: 1-800-722-7263 FAX: 1-800-722-7392

PC Brand, Inc. 954 W. Washington St., Chicago, IL 60607
International Fax #312-633-2888 International Voice #312-226-5200. We are open Mon. thru Fri.: 7am to 7pm; Sat. 8am to 4 pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks & Approved P.O.s Accepted. Prices & specifications subject to change.



WOR 8-10

Circle 198 on reader service card

†TRW-National Computer Maintenance Services-Free on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200 TRW service centers. On site service for 286's available at extra cost. Call for details

Monitors

Mitsubishi

1381 14" Diamond Scan (to 800x600) \$499
HL6605 16" SVGA/EGA (to 1280x1024) .. 1195
HL6905 20" SVGA/EGA (to 1280x1024) .. 2095

NEC

GS-2A 14" MultiMono (to 800x600) \$249
2A 14" SVGA (800x600) 479
3D 14" SVGA/EGA (1024x768i) 649
4D 16" SVGA/EGA (1024x768) 1150
5D 20" SVGA/EGA (1280x1024) 2350

Panasonic

C1391 PanaSync (to 800x600) \$489

Princeton Graphics

Max15 14" Mono (to 1024x768i) \$249
UltraSync 14" SVGA/EGA (800x600) 520
UltraSync 16" SVGA/EGA (1024x768i) 879

Princeton Publishing Labs

Multiview 15" Mono DTP w/adaptor \$690

Samsung/Leading Technology

14" VGA Color .31DP (640x480) \$369
14" VGA Color .41DP (640x480) 299
14" SVGA Color (to 800x600) 419

Seiko

1440 14" SVGA (1024x768i) \$599

Sony

CPD 1304 14" SVGA (to 1024x768) \$689

Zenith

ZCM1492 VGA FlatScreen (640x480) \$619

Video Cards

ATI

VGA Wonder 256K/512K \$245/297

NEC

PC Magazine's Editors Choice

Graphics Engine 16 (1024x768) \$679
Graphics Engine 256 (1024x768) 969

Paradise

VGA 1024 with 256K \$235

Floppy Disk Drives Call

Hard Disk Drives

Conner IDE Upgrades

40M 28ms \$459 100M 25ms .. \$679
200M 19ms 1249

Imega

B1201 20M Int. \$765 B1441 40M Int. \$995
B244X Dual 5.25 44M External 1995
PC2/50 NonbootableCard 169
PC2B/50 Bootable Card 230

Plus Hardcards

Hardcard 20 8 bit \$539
Hardcard 40 8 bit or 16 bit 599
Hardcard 80 16 bit 695

Seagate

20M 65ms ST225 Half Height \$209
20M 35ms ST125 Half Height 229
30M 35ms ST138 Half Height 245
40M 28ms ST251-1 Half Height 319
40M 24ms ST151 Half Height 419
80M 28ms ST4096 MFM 590

Tape Backups

Archive/Maynard

VP60 Internal/External \$639/795
VP150I 150MB Internal Novell certified 895
VP150E 150MB External Novell certified . 1175
VP402 Interface Board for VP Series 115
VP409 PS/2 Interface Board for VP Series 230
Maynstream 60MB Portable 889
Maynstream 150MB Portable 1395
Maynstream 2200HS 2.2GB Portable .. 4350

Colorado Memory Systems

DJ-10 Jumbo 40/80MB Internal \$249
KE-10 External Chasis Kit with Interface ... 139
QFA500 Call

CD-ROM

Microsoft

Bookshelf 1.0 \$195 Stat Pack \$99

Printers

Canon

BJ130e 15" \$695 LBP4 Laser \$995
LBP8-III Laser 8PPM 1650

Citizen

GSX 140 \$329 GSX 200 Call

Epson

LX810 \$179 FX850 \$329
FX1050 439 LQ510 289
LQ850 495 LQ950 495
LQ1010 439 LQ1050 669
LQ2550 899 EPL6000 899

Hewlett Packard

Deskjet Plus .. \$710 LaserJet IIP .. \$1025
Laserjet III 1650 Laserjet IID 2995

Laser Jet Accessories

Adobe

HPLJII Postscript cartridge Call

Pacific Data Products

Plotter in Cart. for II/IIP \$249/269
25 in 1 Cart. for III or IIP 369
Postscript Cart. for III or IIP 375
1M Memory Card for IIP 275

CPI

Superset+ 425 in 1 \$295
Jet Memory III or IIP 174
1M Expansion 96

Kodak Diconix

150Plus \$330

NEC and Texas Instruments Call

Okidata

ML320 \$345 ML321 \$479
ML380 315 ML390+ 475
ML391+ 655 ML393+ 995
Okilaser 400 4PPM 1010

Panasonic

1180 \$189 1191 \$245

Novell Networking

(Novell Authorized Sales and Support)

4 User ELS Level I v. 2.12 \$519
8 User ELS Level II v. 2.15 1250
Advanced Netware v. 2.15 2150
SFT Netware 286/386 3350/4550

Networking Hardware

Gateway

G/Ethernet AT\$435 for PS/2 \$435
G/Ethernet (8 bit) 199

Lantastic

2 MBs Starter Kit/Adapter \$409/195
Ethernet Starter Kit/Adapter 545/269

Standard Micro

PS110 Board for PS/2 \$395
PC500 16 Bit for WS/Server 260/335
PC550 16 Bit Tw. Pr. for WS/Server .. 291/355
PC270E Twisted Pair 139
PC130 Arcnet Board 117
ARCNET passive/active hubs 72/321
ARCNET intell. hub coax/Tw. pr. . 495/609

Synoptics

505UTP Transceiver \$139
1000 Conc./2500 Workgroup Conc. . 2575/839

Tiara

4 port hubs \$49 8 port hubs ... \$285
Lancard/A 8 bit ARCNET 89
Lancard/A 16 bit ARCNET Board 249
Lancard/E 8 bit Ethernet 199
Lancard/E 16 bit Ethernet Tw. Pr. 339
Lancard/E 8 bit Twisted Pair 329

Tops

Repeater \$135 Flashcard \$155

Western Digital Ethercard+

8 bit \$185 Twisted Pair .. \$319
PS/2 285 /EPB PS/2 285
8 bit with ROM Socket 205
16 bit 255

Xircom Pocket Adapters

ARCNET Coax or Tw. Pr. \$295
Ethernet Twisted Pair 489

Peripherals & Software

VGA 1024 with 512K 265
8514/A Plus 569
VGA Memory Upgrade 199
Video Seven
1024i VGA with 256K/512K \$239/299
VRAM VGA with 512K 469

**30-Day Money-Back
Guarantee
Toll-Free Service & Support
No Credit Card Surcharges**

Power Protection Products

Tripplite

SK6 Spike Bar \$29
CCI+ Isobar \$85
IB4 4 Outlet Isobar 45
LC1200 Line Conditioner 159
BC325 Battery Back-up 279
BC450 Battery Back-up 349
OMNI450 or 450LAN Battery Back-up .. 419
BC750LAN Battery Back-up 549
OMNI1200 Battery Back-up 795

Modems

ATI And Hayes Call

PC Brand (100% Hayes Compatible)

1200 Internal with software \$49
1200 Ext. 70 2400 Ext. 129
2400 Internal w/software/MNP5 .. 75/129

US Robotics

Courier HST 14,400 Int./Ext. \$579/599
Courier V.32 9600 External 889
Courier Dual Standard External 995

Programmer's Library 295

NEC

CDR35 Portable \$439
CDR82 Int. 654 CDR72 Ext. 729
XT/AT Interface Kit 149
Clipart 3D 285 Image Folio 285

Sony Kits

CDU510 Int. .. \$665 CDU701 Ext. \$779

Scanners/Digitizers

Complete PC

Half Page Scanner \$189
Full Page Scanner 499
Hand Scanner 165
Complete OCR Software for HS/Page 235/309

Kurta

IS/One 12X12 \$399
IS/One 12X17 655

Microtek

MSF 300G .. \$1495 MSF 300Z Call
MSF 400G 2750 MSII 1050

Summasketch II Digitizers

12x12 \$335 12x18 \$599

Input Devices

CalComp WIZ 1000 DPI \$175
Pen Option 60

Logitech

Hi-Rez C9 Serial Mouse \$85
Hi-Rez C9 Bus Mouse 92
Trackman 320 DPI Serial/Bus 99/109

Microsoft Mice

Serial with Paintbrush 200 DPI \$109
Bus Mouse with Paintbrush 105

1124 299 1624 429

1695 415 4420 Laser Call

Logical Connection

256K/512K Print Buffer \$449/529

Plotters

CalComp

1023 \$3695
1043DM 5700

Houston Instruments (Call for Prices)

DMP52 DMP52MP DMP61
DMP61DL DMP62 DMP62DL

Image Maker

(PC Magazine's Editors Choice) Call

Software for Windows 3.0 Environment

Aldus Pagemaker \$499
AMI 129
AMI Pro 319
Corel Draw V. 1.2 329
Microsoft Windows 3.0 99
Microsoft Excel 2.1 309
Microsoft Word for Windows 325
Precision Software Superbase 2 189
Precision Software Superbase 4 395
HDC Windows Express or Manager 49
Crosstalk for Windows 1.0 129

Software

Autodesk Animator \$239
Borland Quattro 95 Quattro Pro 329
Caere Omnipage 386 2.1 619
Datastorm ProComm Plus 52
dBase IV 479 Microrim R:Base 489
Delrina Perform 2.0 159
Delta Technology Direct Access 59
Deskview 386 v. 2.2 125
Fifth Generation Fastback Plus 109
Foxbase + ... 189 Harvard Graphics 329
Generic CADD Level 3 205
IBM Displaywrite V NEW! Call
Lotus Freelance Plus 329
Lotus 123 r. 2.2 349 Lotus 123 r. 3.0 409
Microsoft Works99 Word 5.0 215
Norton Utilities Advanced 95
Paradox v. 3.0 . 445 PC Tools 6.0 95
Peachtree Acctg III w/Data Query . 149/225
Pro. Write 145 QEMM 5.0 65
Quicken 39 Timeslips III 159
Symatec Q&A . 220 Timeline 3.0 379
Timeworks Publish It! 125
Word Perfect 5.1 249
Wordstar 6.0 249
Ventura Publisher 2.0 519

Call for Prices on
Other Peripherals & Software!

1-800-PC BRAND

TEL: 1-800-722-7263 FAX: 1-800-722-7392

PC Brand, Inc. 954 W. Washington St., Chicago, IL 60607

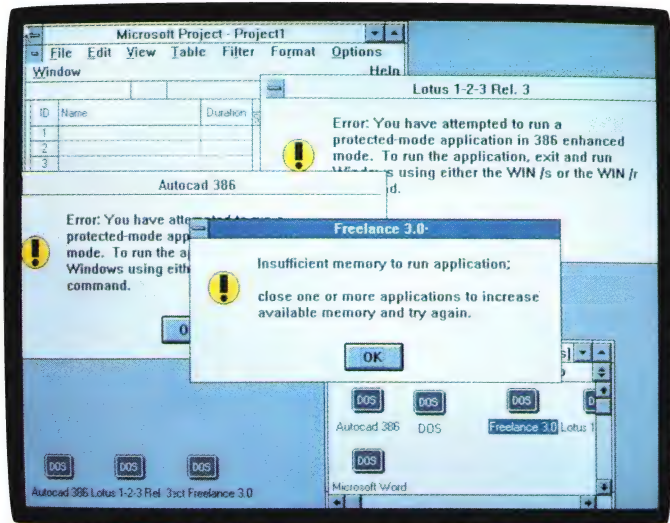
International Fax #312-633-2888 International Voice #312-226-5200. We are open Mon. thru Fri.:
7am to 7pm; Sat.: 8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand Direct
Advantage MasterCard, Checks and Approved P.O.s are Accepted. Prices and specifications subject
to change.



WOR 8-10

Is Windows 3.0 the end of DESQview™?

Not if you're still using DOS programs.



Windows 3.0. The multitasking, windowing environment.

Are you still using MS-DOS programs on your PC?

You may want to use DESQview as your primary operating environment.

The new DESQview 2.3 and DESQview 386 2.3 let you use your favorite DOS and DOS-extended programs in windows side-by-side on 80286, 80386 and i486 PCs. As you can see above, you can even run Windows programs



DESQview 386 2.3. The multitasking, windowing environment.

within DESQview 386. So the next time you get error messages like the ones at the left in Windows, remember how the same set of programs look running in DESQview.

Whatever standard you use—DOS, extended DOS or Windows—DESQview is still the best way to get the most out of the hardware and software you own today.

DESQview. The obvious choice.

Quarterdeck

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405 (213) 392-9851 Fax: (213) 399-3802

This comparison was made using a system like the one you might run: Both shots show an ALR FlexCache 33/386 running DOS 3.3 with VGA display adaptor, Novell NetWare v3.01 Rev. A, with IPX/SPX v3.01 Rev A, Microsoft Mouse 7.00, and Microsoft SMARTDrive v3.03 disk cache. Buffers were set to 20. For the Windows screen, we ran Microsoft Windows 3 HIMEM.SYS and EMM386.SYS. For the DESQview screen, we ran QEMM 386 v5.1.

Trademarks: Microsoft, Windows, MS-DOS, 80386, i486, ALR, FlexCache, Novell, NetWare. ©1990 Quarterdeck Office Systems

T H E R E A D E R S ' C H O I C E

1990



JAVIER ROMERO

THE WORLD CLASS AWARDS ARE BACK AND BIGGER THAN EVER—WITH MORE CATEGORIES, MORE CLOSE FINISHES, AND THE BIGGEST READER RESPONSE EVER.

WINNING PROFILES

For most of us, the phrase "you may already have won" is merely a cheap marketing ploy, but for three lucky PC World readers, it's become a reality. Every year we reach into the heap of World Class ballots and randomly select three winners. Our third-prize winner walks away with the most popular laptop computer, while our second-prize recipient takes home the top trans-portable. The first-prize winner hauls in the jackpot: the premier desktop computer, plus the remaining lineup of World Class hardware and software—a package worth nearly \$31,000.

KEITH CORSBIE

First prize: Compaq Deskpro 386/33, plus the winning hardware and software products

HOME: Miami, Florida

AGE: 38

PROFESSION: Accounting manager for The Wackenhut Corporation, which provides security services for power plants and government installations

HOBBY: Tennis

OFFICE PC: IBM PS/2

Model 70

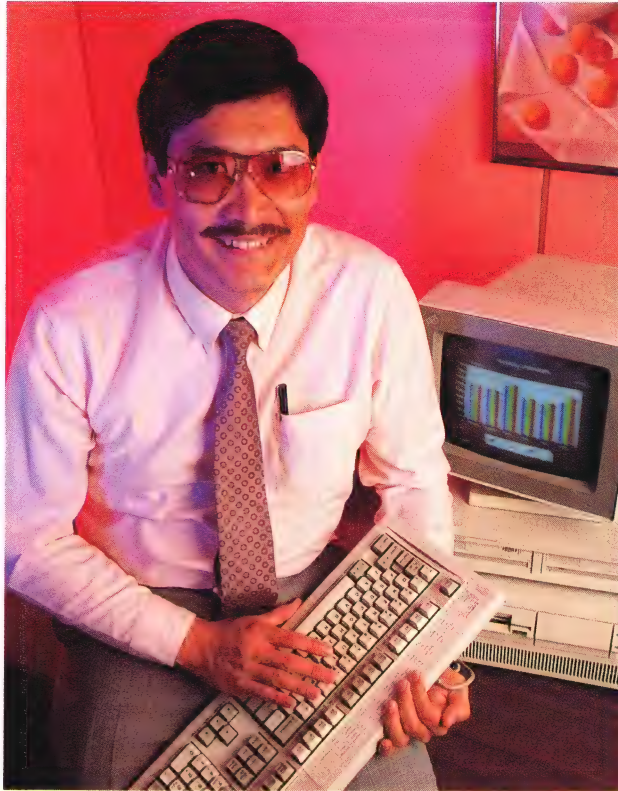
HOME PC: Kaypro PC XT clone with an NEC MultiSync monitor and an Epson dot matrix printer

CORE PROGRAMS USED:

1-2-3 release 3, DisplayWrite, Harvard Graphics, The Norton Utilities

PROFILE: A PC-proficient manager who sits on the corporate committee that makes recommendations for new equipment

QUOTE: "Am I going to have to pay taxes on all this?"



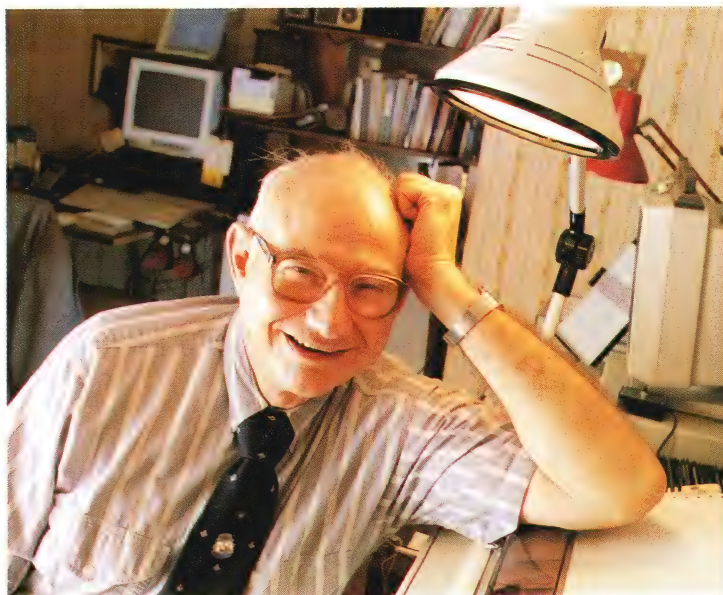
When we want your opinion, we ask for it—and this year your response was earthshaking. Our World Class Awards contest produced more than 30,000 ballots—the biggest landslide in PC World history—proving more than ever that our readers are informed, demanding, and not shy about sharing their thoughts.

We asked readers to name their favorite hardware and software products in 37 categories, offering over \$40,000 in prizes for three lucky voters (see the sidebar "Winning Profiles"). When we finally dug our way out of the rubble, we uncovered a heap of old favorites and more than a few newcomers. The results appear on the following pages.

In this industry, nothing stands still very long, including the World Class contest. This year we added a handful of important categories, such as top data base utility and best on-line service or BBS. And for the first time we asked readers to name their favorite mail-order firms and the top companies in service and support.

What makes one company soar where another stumbles? Responsiveness, reliability, and technical expertise, say our readers, who voted overwhelmingly for WordPerfect Corporation as the most user-friendly software firm. Among hardware manufacturers the race was virtually a dead heat between IBM and Austin, Texas-based Dell Computer, but IBM won by a nose. When it comes to ordering by mail, our voters

DANIEL TYNAN



MARK LUINENBURG

HOWARD TEGLAND

SECOND PRIZE: Compaq Portable 386

HOME: Pierre, South Dakota

AGE: 64

PROFESSION: Retired; former audiovisual technician for the South Dakota State Library for the Handicapped

HOBBY: Uses his PC to do volunteer work for the Shriners' Circus Club and performs occasionally as clown. "My clown name is GIGO—garbage in, garbage out. It's my own little joke."

HOME PC: AT&T PC 6300 with 30MB hard disk, a Plus HardCard, and an Epson dot matrix printer

CORE PROGRAMS USED: PC-Write, WordStar, Lucid 3D, PFonts

PROFILE: Home PC user

QUOTE: "Last thing I ever won was a fifth of whiskey when they pulled my name out of a hat. That was 20 years ago."

CRAIG GARRETT

THIRD PRIZE: Compaq LTE/286

HOME: Colorado Springs, Colorado

AGE: 42

PROFESSION: Sales manager for Outomec, a mining equipment manufacturer

HOBBIES: Racquetball and computers. "I enjoy messing around with computers, setting up customized data bases, that sort of thing."

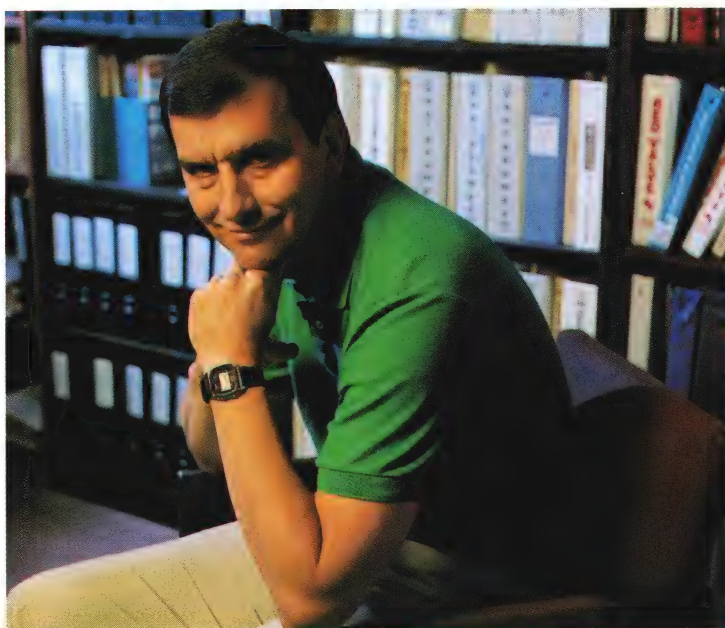
OFFICE PC: Zenith TurbosPort 386

HOME PC: Stanford Computers XT with an Epson LQ-2500 printer

CORE PROGRAMS USED: Informix's SmartWare, WordStar 2000, Harvard Graphics, The Norton Utilities, Lap-Link

PROFILE: PC road warrior

QUOTE: "I travel quite a bit, and I take a PC with me when I drive, though not so much when I fly. It's nice to have in a hotel room, so I can do some work in the evening."



ERIC BALKE

gave the stamp of approval to PC Connection in Marlow, New Hampshire, proving that the best-run companies are not always the biggest (see the sidebar "Mail-Order Pride").

But knowing which products our readers voted for wasn't enough—we wanted to know *why*. So we called voters at random to get the skinny on their likes and dislikes, then posed the same questions to the "experts"—authors, developers, and those oft-quoted industry gurus. Who has more insight, the amateurs or the pros? See the sidebar "The People and the Pundits," and judge for yourself.

Of course, some things never change. Compaq won its fourth straight title as top desktop computer. And for the eighth year in a row 1-2-3, dBASE, Flight Simulator, the

Microsoft Mouse, and the Hayes Smartmodem captured their categories—but most margins of victory were tighter than ever. Will 1991 be the year when Quattro overtakes 1-2-3 or Paradox topples dBASE? Will most PC users finally make the long-awaited move to Windows?

We're not making any predictions. You'll just have to tune in next year for the ninth annual World Class Awards. Or better yet, grab a ballot and be a part of next year's avalanche. ☛

Daniel Tynan is an assistant editor for PC World.

World Class ballots were tabulated by the Wilson Research Group in San Carlos, California.

THE PEOPLE AND THE PUNDITS

As the saying goes, if you laid all the experts in the world end to end, they'd still point in every single direction. In our calls to professional pundits and World Class voters, we encountered a wide range of viewpoints, but one theme echoed consistently throughout: Products must be easy to use and well supported. Two common traits among our respondents were a thorough knowledge of computing and a passion for well-designed hardware and software. Here's a sampling of some of the things they told us.

DATA BASES

Pundits: "Why do I use *dBASE*? Because the application generator is superb. The one in *dBASE IV* is a great tool, once you understand what you can do with it. It lets you develop and prototype decent applications without spending enormous amounts of time writing lines of code." *Edward Jones, author of Using dBASE IV 1.1*

"We're a data base-intensive office, and we use *dBASE*. We'd have to see some incredible advantage to another program before we'd switch. Rewriting all of our applications would be a nightmare." *Jeffrey Tarter, editor of Soft-letter*

People: "I like *dBASE III*. It's easy to train people to do simple things, and as they gain more proficiency, the program grows along with them." *Nevin House, microcomputer specialist, Arlington, Virginia*

"I'm most impressed by the volume of information *dBASE* can manage. We keep humongous records on all the people who work in our department, and *dBASE* handles them, no problem." *David Kinney, petty officer, U.S. Navy*

WORD PROCESSORS

Pundits: "I think *Word* has a superior feature set, but I can't tell anyone to abandon *WordPerfect* and go with *Word*. What would you rather drive, a Porsche or a BMW?"

"The future is definitely in graphical word processors. If I had to pick a word processor today, I'd pick *Word* for DOS. Three years from now I'd probably pick *Word* for Windows—or even *WordPerfect* for Windows, depending on what they do with it." *Peter Rinearson, author of Word Processing Power With Microsoft Word and creator of MasterWord, the Microsoft Word companion disk*

People: "I love *Word* for Windows. It's so easy to use, and you can cut and paste pictures without a lot of keystrokes. After using *Windows*, *WordPerfect*'s menus and function keys are frustrating." *Nancy Louis, PC consultant, Newton Square, Pennsylvania*

"I don't like graphical word processors. Bumping back and forth between the mouse and keyboard all the time—it gets irritating. The mouse has its uses, but when you're dealing

with character-based programs, characters are what you want to put in there." *Don Sandell, MIS director, Minneapolis, Minnesota*

SPREADSHEETS

Pundits: "A lot of people are thoroughly disgusted with Lotus—but that doesn't mean corporations are about to throw *1-2-3* out the door. There's too much inertial mass built up, too much time and money invested in building their models." *Amy Wohl, president of Wohl Associates*

"*Quattro Pro* is a much better product than *1-2-3* release 3 and more powerful than release 2.2. *1-2-3*'s file-linking capability lets you open only one worksheet at a time. *Quattro* lets you open many worksheets and link them together—it's much more functional." *Steve Cobb, coauthor of Douglas Cobb's 1-2-3 Release 2.2 Handbook and a contributing author to Quattro Companion*

People: "I like *1-2-3* release 3. Why? I'm a power user. I like three dimensions, and nobody else has it. Borland says *Quattro* does, but it really doesn't. It lets you link spreadsheets, but it isn't true 3-D." *Don Sandell*

"I like *Excel*, but I prefer *Quattro* because you can run it in multiple interfaces. *1-2-3* users can jump into it and go. And you get all the fonts. *Excel* lets you add fonts, but Borland just hands them to you when you buy the product." *Dale Fanning, technician and LAN operator for cable TV network, Virginia Beach, Virginia*

OPERATING ENVIRONMENTS

Pundits: "Before 3.0, *Windows* was a joke. I think 3.0 makes all the difference." *John Seybold, publisher of The Seybold Report on Desktop Publishing*

"The crux of *Windows*' popularity isn't multitasking but the consistent look and feel. It's easy to learn, and there are a bunch of fully featured applications." *Leon Chalmick, contributing editor, Acknowledge, The Window Letter*

People: "Other environments are Volkswagens—*Windows* is consistent and smooth. I didn't even crack the manual to learn *Ami Pro*—I just installed it and ran it." *Jess Olonoff, president, Docutech Inc.*

MAIL ORDER

Pundits: "Mail order has had a history of problems. Paper-thin margins and cutthroat prices have put some companies in precarious positions. But it's gotten better as the market has thinned out. I hear fewer horror stories now." *Tracy Licklider, president of the Boston Computer Society*

People: "CompuAdd is an incredible outfit. It's a little more expensive, but boy are they thorough. You discuss your

needs with them, and they tell you whether what you want is incompatible and what you should be getting. A lot of companies don't have a staff this savvy—they just send you what you order." *Nancy Louis*

"I love PC Connection. The service is great: You need it today, they send it. And they always send you the latest version of the software—not like some other companies." *Gayle Joas, PC consultant, Newton Square, Pennsylvania*

SERVICE AND SUPPORT

Pundits: "WordPerfect's support operation is the biggest and the best. They take good care of everybody. They don't ask you if you're a customer, because they figure if you aren't one now, next time out you will be." *Amy Wohl*

"I think service and support are as important as any other factor in choosing hardware and software. The trouble is, unless you've dealt with the company before, you only find out about these things *after* you've bought the product." *Tracy Licklider*

People: "I'd rather have a machine that's one generation behind the rest and have a good working relationship with the company that makes it than have my state-of-the-art machine fail, call a company 1500 miles away, and get a hard time over the phone." *Bill Dirk, graduate student/PC consultant, Austin, Texas*

"I'd pick Compaq over IBM. When something goes wrong,

it's much easier to reach somebody and get something done." *Gayle Joas*

SYSTEMS

Pundits: "The Deskpro 386/33 is suited for applications most of us down here in the trenches would never dream of using. It's like naming a Lamborghini 'Car of the Year'—it's a system many people might like to have but not many are likely to buy." *Peter Lewis, computer columnist for the New York Times*

"Faster machines win because users put speed above everything else—they absolutely want performance. Whether they really need that power is a function of user profile. Programmers and AutoCAD users must have fast turn-around; for a WordPerfect guy, a slow 286 is absolutely as fast as he needs." *Steve Gibson, InfoWorld columnist and president of Gibson Research Corp.*

People: "I figure if you're going to get a new computer, you might as well get the most advanced in the field, because everything changes so rapidly. The machines that came out five years ago are obsolete." *Lars C. Christensen III, beef farmer, Elk Creek, Virginia*

"Right now, my Deskpro thinks about as fast as I can type. Unless we install a network, I see no use for a 33-MHz machine." *Michael Thomas, accounting manager, Omaha, Nebraska*

MAIL-ORDER PRIDE: SERVICE AND SUPPORT ARE THE KEY

The most popular mail-order firms in our survey share certain characteristics: fast delivery, money-back guarantees, and strong support policies. Here's how the six top vote-getters compare.

	PURCHASE AND RETURN POLICIES						TECHNICAL SUPPORT					
	Estimated delivery time ¹	Accepts credit cards	Charges card before shipping	Money-back guarantee	Extended warranties	Volume discount	On-site service	Free phone support	Toll-free number	Technical support hours	BBS support	Fax support
PC CONNECTION	1 to 2 days	yes	no	no ²	no	yes	no	unlimited	yes	M-F 9-5:30	no	yes
COMPUADD	3 to 5 days	yes	no	30 days	systems only	yes	yes	unlimited lifetime	yes	M-F 8-7	yes	yes
DELL COMPUTER	4 days	yes	no	30 days	yes	yes	yes ³	unlimited	yes	M-F 7-7	yes	yes
TELEMART	1 to 2 days	yes	no	30 days	no	yes	yes ⁴	— ⁵	n/a	n/a	no	yes
GATEWAY 2000	within 2 weeks	yes	no	30 days (hardware only)	yes ⁶	yes	yes ⁴	unlimited lifetime	yes	M-F 8 a.m. - 10 p.m., S 9-4	yes	yes
NORTHGATE COMPUTER SYSTEMS	within 2 weeks	yes	no	30 days	yes	yes	yes ⁷	unlimited	yes	24 hours, 7 days	yes	yes

¹ Vendor estimate.

² No formal policy; determined on case-by-case basis.

³ Through Xerox. First year free; additional support approximately 10 percent of system cost per year.

⁴ Through TRW.

⁵ Support for MIT brand systems only, provided by manufacturer.

⁶ One year free parts and labor; thereafter, free labor and lifetime free phone support.

⁷ Through Bell Atlantic.

H A R D W A R E

% Product

Manufacturer

DESKTOP COMPUTER

6	Compaq Deskpro 386/33	Compaq Computer
5	Compaq Deskpro 386s	Compaq Computer
5	Dell System 325	Dell Computer
3	IBM PS/2 Model 80	IBM
3	IBM PS/2 Model 70 486/25	IBM
78	Others	

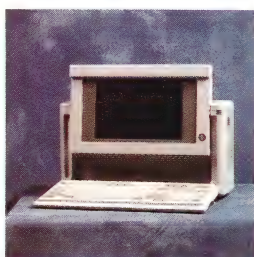
75% of the respondents voted in this category



PORTABLE COMPUTER

15	Compaq Portable 386	Compaq Computer
11	IBM PS/2 Model P70	IBM
8	Toshiba T5200	Toshiba
7	Compaq Portable III	Compaq Computer
5	Compaq SLT/286	Compaq Computer
5	Toshiba T3200SX	Toshiba
49	Others	

32% of the respondents voted in this category



LAPTOP COMPUTER

15	Compaq LTE/286	Compaq Computer
6	Toshiba T5200	Toshiba
6	Toshiba T1600	Toshiba
4	Toshiba T3200	Toshiba
4	Compaq SLT/286	Compaq Computer
65	Others	

49% of the respondents voted in this category



LASER PRINTER

37	HP LaserJet Series II	Hewlett-Packard
26	HP LaserJet Series IIP	Hewlett-Packard
11	HP LaserJet Series IID	Hewlett-Packard
3	LaserJet Series III	Hewlett-Packard
2	NEC Silentwriter LC890	NEC Technologies
21	Others	

66% of the respondents voted in this category



DOT MATRIX PRINTER

14	Panasonic KX-P1124	Panasonic
9	Epson LQ-2550	Epson America
6	Epson LQ-1050	Epson America
4	Epson LQ-850	Epson America
3	Panasonic KX-P1624	Panasonic
64	Others	

64% of the respondents voted in this category



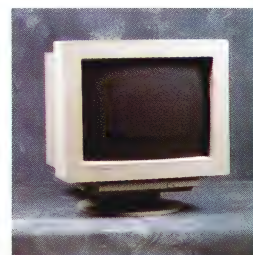
% Product

Manufacturer

MONITOR

16	NEC MultiSync 3D	NEC Technologies
15	NEC MultiSync 2A	NEC Technologies
7	NEC MultiSync 5D	NEC Technologies
4	Zenith ZCM-1490	Zenith Data Systems
4	NEC MultiSync 4D	NEC Technologies
54	Others	

53% of the respondents voted in this category



MOUSE

50	Microsoft Mouse	Microsoft
33	Logitech Series 9 Mouse	Logitech
3	Trackman Stationary Mouse	Logitech
2	PC Mouse	Mouse Systems
12	Others	

46% of the respondents voted in this category



MODEM

33	Smartmodem 2400	Hayes Microcomputer Products
4	Smartmodem 1200	Hayes Microcomputer Products
4	Intel 2400EX	Intel
4	V-series Smartmodem 9600	Hayes Microcomputer Products
4	Courier HST 9600	U.S. Robotics
51	Others	

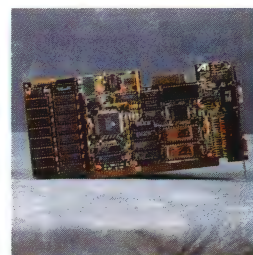
39% of the respondents voted in this category



GRAPHICS BOARD

18	VGA Wonder	ATI Technologies
12	VGA Plus	Paradise Systems
6	VGA Professional	Paradise Systems
4	V-RAM VGA	Video Seven
4	Hercules Graphics Card	Hercules Computer Technology
56	Others	

28% of the respondents voted in this category



MASS STORAGE

12	Seagate ST251-1	Seagate Technology
9	Seagate ST4096	Seagate Technology
5	Hardcard 80II	Plus Development
3	MW-5U1 WORM Drive	Mitsubishi
3	Bernoulli Box II 44	Iomega
2	Bernoulli Box II	Iomega
66	Others	

24% of the respondents voted in this category



% Product Manufacturer

SCANNER

35	HP ScanJet Plus	Hewlett-Packard
26	ScanMan	Logitech
5	Complete Page Scanner	The Complete PC
5	Handy Scanner 3000	DFI
4	MSF-300G	Microtek
25	Others	

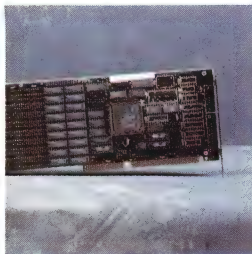
20% of the respondents voted in this category



MEMORY EXPANSION BOARD

41	AboveBoard Plus	Intel
14	Rampage Plus	AST Research
6	SixPakPlus	AST Research
4	Inboard 386	Intel
35	Others	

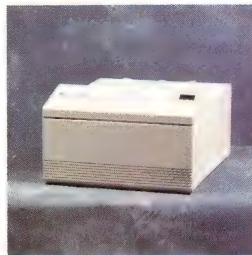
19% of the respondents voted in this category



MOST PROMISING NEWCOMER—HARDWARE

10	HP LaserJet Series IIP	Hewlett-Packard
6	Compaq Systempro	Compaq Computer
4	Compaq LTE/286	Compaq Computer
4	Next Computer	Next
3	Compaq Deskpro 486/25	Compaq Computer
3	Poqet PC	Poqet
70	Others	

19% of the respondents voted in this category



SOFTWARE

% Product Manufacturer

WORD PROCESSING

54	WordPerfect	WordPerfect
13	Microsoft Word	Microsoft
8	WordStar Professional	WordStar Int'l
5	Professional Write	Software Publishing
5	Word for Windows	Microsoft
15	Others	

85% of the respondents voted in this category



SPREADSHEET

34	1-2-3 2.xx	Lotus Development
23	Quattro Pro	Borland Int'l
15	Excel	Microsoft
13	1-2-3 3	Lotus Development
4	SuperCalc5	Computer Associates
11	Others	

72% of the respondents voted in this category

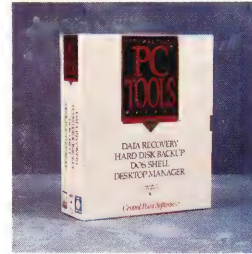


% Product Manufacturer

UTILITY

32	PC Tools Deluxe	Central Point Software
29	Norton Utilities Advanced	Symantec
8	XtreePro Gold	Executive Systems
5	Norton Commander	Symantec
2	Magellan	Lotus Development
2	Fastback Plus	Fifth Generation
22	Others	

46% of the respondents voted in this category



RELATIONAL DATA BASE

23	dBASE IV	Ashton-Tate
20	Paradox	Borland Int'l
14	dBASE III Plus	Ashton-Tate
8	R-base for DOS	Microrim
7	FoxPro	Fox Software
28	Others	

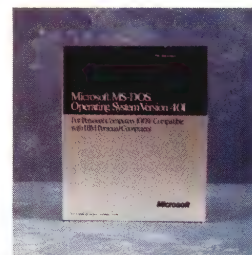
42% of the respondents voted in this category



OPERATING SYSTEM/ENVIRONMENT

41	MS-DOS/PC-DOS 3.xx	Microsoft/IBM
18	MS-DOS/PC-DOS 4.xx	Microsoft/IBM
16	Microsoft Windows 2.xx	Microsoft
7	Desqview 2.xx	Quarterdeck
6	OS/2	Microsoft/IBM
12	Others	

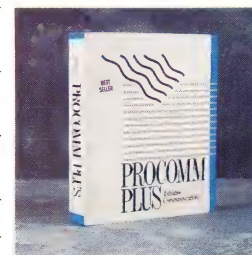
40% of the respondents voted in this category



COMMUNICATIONS

53	Procomm Plus	Datasmart Technologies
6	Smartcom III	Hayes Microcomputer Products
4	Crosstalk XVI	DCA/Crosstalk Communications
4	Telix	Exis
4	Crosstalk Mk.4	DCA/Crosstalk Communications
29	Others	

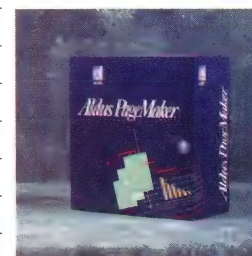
38% of the respondents voted in this category



DESKTOP PUBLISHING

37	PageMaker	Aldus
32	Ventura Publisher	Ventura Software
9	First Publisher	Software Publishing
6	Publish-It	Timeworks
2	WordPerfect	WordPerfect
14	Others	

37% of the respondents voted in this category



% Product

Manufacturer

PROGRAMMING LANGUAGE

20	Turbo Pascal	Borland Int'l
18	Turbo C	Borland Int'l
17	QuickBASIC	Microsoft
12	Microsoft C	Microsoft
6	QuickC	Microsoft
27	Others	

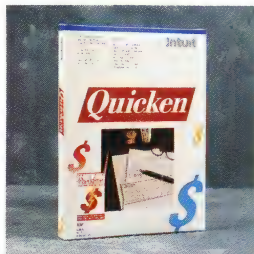
29% of the respondents voted in this category



PERSONAL FINANCE

43	Quicken 3.0	Intuit Software
30	Andrew Tobias' Managing Your Money	MECA Software Inc.
14	Money Counts	Parsons Technology
3	Dollars and Sense	Monogram
10	Others	

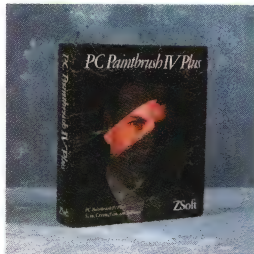
28% of the respondents voted in this category



DRAW/PAINT

36	PC Paintbrush	Z-Soft
25	Corel Draw	Corel Systems
4	Designer	Micrografx
3	Deluxe Paint II	Electronic Arts
3	Harvard Graphics	Software Publishing
29	Others	

28% of the respondents voted in this category



GAME

16	Microsoft Flight Simulator	Microsoft
8	Leisure Suit Larry	Sierra On-Line
7	Tetris	Spectrum Holobyte
4	F-19 Stealth Fighter	Microprose
4	SimCity	Maxis
4	King's Quest	Sierra On-Line
57	Others	

27% of the respondents voted in this category



PRESENTATION GRAPHICS

59	Harvard Graphics	Software Publishing
15	Freelance Plus	Lotus Development
3	Draw Applause	Ashton-Tate
2	Graph Plus	Micrografx
21	Others	

26% of the respondents voted in this category



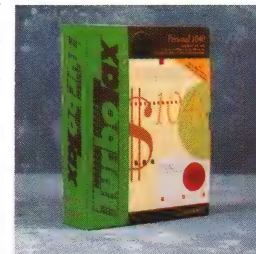
% Product

Manufacturer

TAX PLANNING OR PREPARATION

64	TurboTax	Chipsoft
14	Tax Cut	MECA Software Inc.
5	Personal Tax Preparer	Parsons Technology
2	AM-Tax Advanced	AM Software
2	Andrew Tobias' Managing Your Money	MECA Software Inc.
13	Others	

26% of the respondents voted in this category



FLAT-FILE DATA BASE

27	Q&A 3.0	Symantec
15	Reflex	Borland Int'l
14	PC-File Plus	ButtonWare
8	Professional File	Software Publishing
7	Alpha Four	Alpha Software
29	Others	

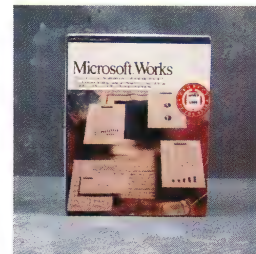
22% of the respondents voted in this category



INTEGRATED

37	Microsoft Works	Microsoft
12	First Choice	Software Publishing
9	Symphony	Lotus Development
7	Enable/OA	Enable Software
6	Framework III	Ashton-Tate
6	SmartWareII	Informix
23	Others	

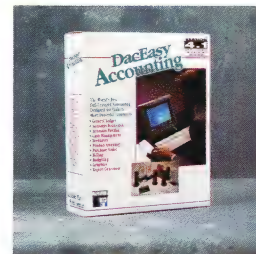
21% of the respondents voted in this category



ACCOUNTING

22	DacEasy Accounting	DacEasy
17	Peachtree Complete III	Peachtree Software
12	Quicken 3.0	Intuit Software
5	Accpac Plus	Computer Associates
3	Money Counts Plus	Parsons Technology
41	Others	

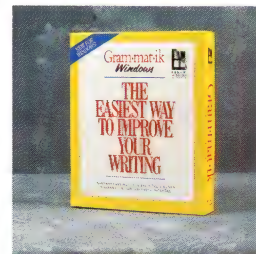
21% of the respondents voted in this category



WORD PROCESSING UTILITY

28	Grammatik	Reference Software Int'l
19	RightWriter	RightSoft
6	WordPerfect Executive	WordPerfect
5	WordPerfect Library	WordPerfect
2	Fontware	Bitstream
40	Others	

20% of the respondents voted in this category



% Product Manufacturer

PERSONAL ORGANIZER

19 SideKick Plus	Borland Int'l
16 Agenda	Lotus Development
13 PC Tools Deluxe	Central Point Software
7 Current	IBM
5 WordPerfect Library	WordPerfect
40 Others	

19% of the respondents voted in this category



COMPUTER-AIDED DESIGN

54 AutoCAD	Autodesk
12 Generic CADD	Generic Software
10 DesignCAD	American Small Business
3 AutoSketch	Autodesk
2 EasyCAD	Evolution
19 Others	

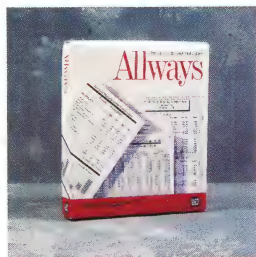
19% of the respondents voted in this category



SPREADSHEET UTILITY

43 Allways 1.2	Funk Software
14 Sideways	Funk Software
7 SeeMore	Personics
4 1-2-3 2.xx	Lotus Development
3 Impress	PC Publishing
29 Others	

17% of the respondents voted in this category



ON-LINE SERVICE/BBS

54 CompuServe	CompuServe
16 Prodigy	Prodigy Services
8 GENie	General Electric
22 Others	

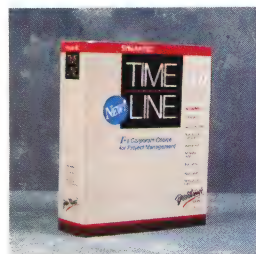
17% of the respondents voted in this category



PROJECT MANAGER

25 Time Line	Symantec
19 Harvard Project Manager	Software Publishing
12 Project Scheduler 4	Scitor
9 SuperProject	Computer Associates
7 Microsoft Project	Microsoft
28 Others	

12% of the respondents voted in this category



% Product Manufacturer

DATA BASE UTILITY

15 Clipper	Nantucket
10 R&R Report Writer	Concentric Data
8 dBASE IV	Ashton-Tate
6 dBASE III Plus	Ashton-Tate
4 Q&A 3.0	Symantec
57 Others	

9% of the respondents voted in this category



MOST PROMISING NEWCOMER—SOFTWARE

6 Quattro Pro	Borland Int'l*
6 Word for Windows	Microsoft
4 Magellan	Lotus Development
3 Animator	Autodesk
81 Others	

18% of the respondents voted in this category



*Percentages rounded; product received largest number of votes.

READER POLL

LOCAL AREA NETWORK—OPERATING SYSTEM

52 Advanced Netware/286 (Novell)
8 Advanced Netware/386 (Novell)
7 LANtastic (Artisoft)
4 VINES (Banyan Systems)
4 3+Share (3Com)
25 Others

14% of the respondents voted in this category

LOCAL AREA NETWORK—BOARD

11 Token-Ring (IBM)
9 Etherlink (3Com)
8 LANtastic board (Artisoft)
8 EtherCard Plus (Western Digital)
6 Arcnet board (Standard Microsystems)
58 Others

9% of the respondents voted in this category

BEST SERVICE AND SUPPORT—SOFTWARE COMPANY

37 WordPerfect
14 Microsoft
5 Borland Int'l
4 Lotus Development
2 Central Point Software
38 Others

27% of the respondents voted in this category

BEST SERVICE AND SUPPORT—HARDWARE COMPANY

13 IBM*
13 Dell Computer
7 Hewlett-Packard
6 Northgate Computer Systems
6 Compaq
5 Gateway 2000
50 Others

22% of the respondents voted in this category

*Percentages rounded; company received largest number of votes.

BEST MAIL-ORDER COMPANY

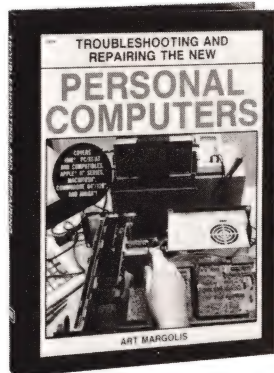
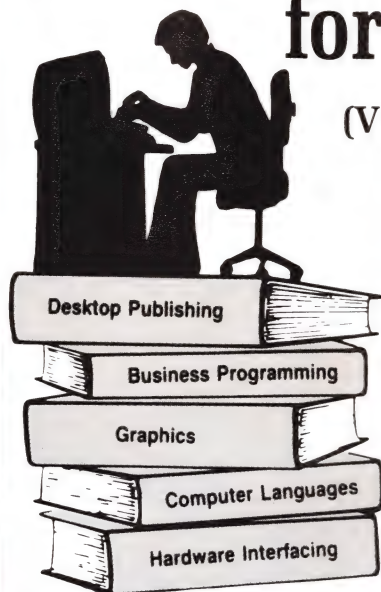
25 PC Connection
17 CompuAdd
8 Dell Computer
4 Telemart
4 Gateway 2000
3 Northgate Computer Systems
39 Others

30% of the respondents voted in this category

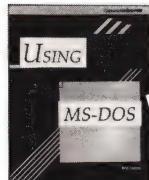
For more information about all products in this article, circle reader service no. 908.

SELECT 5 BOOKS for only \$4⁹⁵

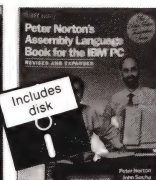
(Values to \$128.75)



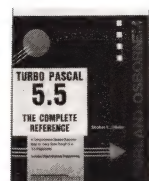
2809 \$29.95



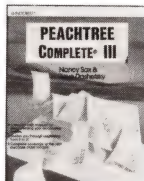
15022P \$22.95



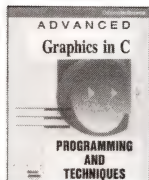
9292 \$49.95
Counts as 3



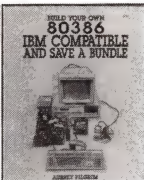
15005P \$26.95
Counts as 2



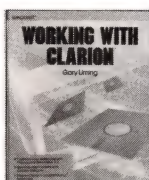
3564P \$19.95



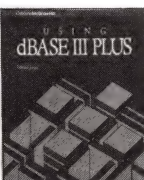
15001P \$22.95



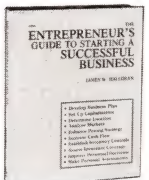
3131 \$26.95



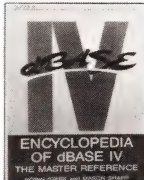
3403 \$29.95
Counts as 2



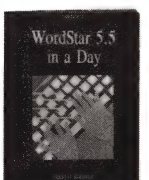
15002P \$18.95



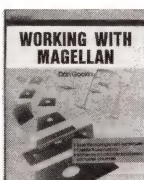
30049P \$15.95



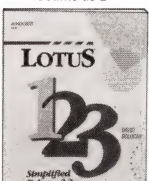
3332 \$34.95



3330P \$19.95
Counts as 2



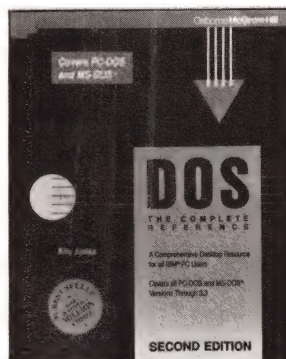
3461P \$21.95



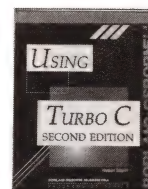
3440P \$17.95



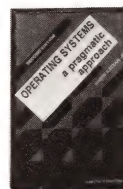
3341 \$16.95



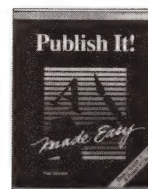
15013P \$26.95
Counts as 2



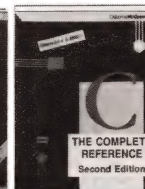
15024P \$22.95



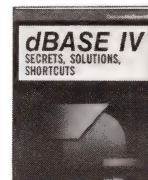
9808 \$34.95



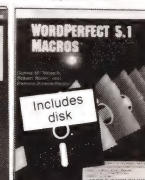
15023P \$21.95



9309P \$28.95
Counts as 2



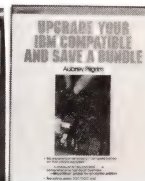
15011P \$24.95



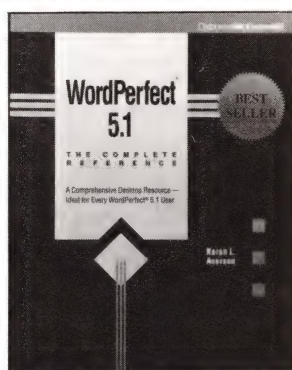
3617 \$34.95
Counts as 2



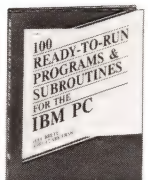
15008P \$24.95



3468 \$26.95



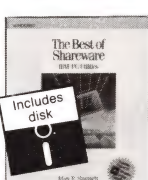
15020P \$24.95



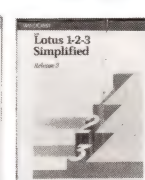
1540P \$17.95



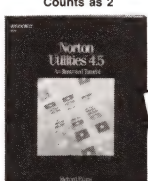
2879P \$22.95



3006P \$29.95
Counts as 2



3088P \$16.95



3359P \$16.95



3382P \$29.95

When it's new and important in business or personal computing,
The Computer Book Club has the information you need . . .
at savings of up to 50% off publishers' prices!



The Computer Book ClubSM

Membership Benefits • Big Savings. In addition to this introductory offer, you keep saving substantially with members' prices of up to 50% off the publishers' prices. • **Bonus Books.** Starting immediately, you will be eligible for our Bonus Book Plan, with savings of up to 80% off publishers' prices. • **Club News Bulletins.** 15 times per year you will receive the Book Club News, describing all the current selections—mains, alternates, extras—plus bonus offers and special sales, with scores of titles to choose from. • **Automatic Order.** If you want the Main Selection, do nothing and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the reply form provided. You will have at least 10 days to decide. As a member, you agree to purchase at least 3 books within the next 2 years and may resign at any time thereafter. • **Ironclad No-Risk Guarantee.** If not satisfied with your books, return them within 10 days without obligation! • **Exceptional Quality.** All books are quality publishers' editions especially selected by our Editorial Board. PCW1090

All books are hardcover unless number is followed by a "P" for paperback. (Publishers' Prices Shown)
A shipping/handling charge and sales tax will be added to all orders.

If card is missing, use this address to join: ©1990 THE COMPUTER BOOK CLUB,
Blue Ridge Summit, PA 17294-0820

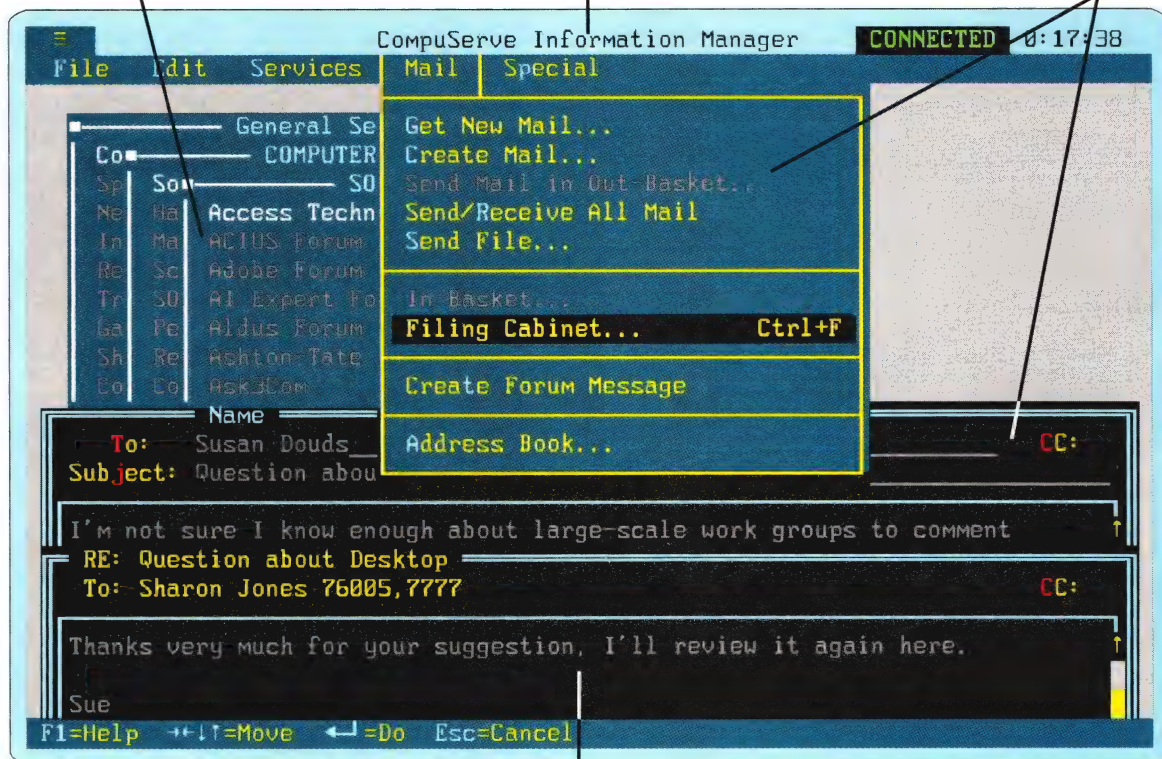
Circle 49 on reader service card

Easy does it.

Track where you've been and chart where you're going in a windows-like environment.

Get quick access to multiple information sources.

Save time by using pull-down menus, dialog boxes, and uncomplicated commands.



Save time and money by working offline.

Welcome to the wonderful — and wonderfully easy — new world of CompuServe. Where you can now use the power of your MS-DOS personal computer, while taking advantage of all the online information and communications resources we have to offer.

CompuServe now features CompuServe Information Manager software, making us friendlier and more helpful than ever. Now, you can utilize a windowed PC interface with pull-down menus and dialog boxes. And

you can do more offline — composing letters or reading answers to PC support questions, for instance.

We're offering you this whole new world of CompuServe for only \$39.95* including software and a \$25.00 usage credit. Usage charges are as low as 10¢ a minute.

So let us show you how CompuServe can put you on easy street. If you're already a member, just type GO ORDER. If not, see your computer dealer, or call us today.

CompuServe®
800 848-8199

Requirements for MS-DOS version of CompuServe: Hayes compatible modem and 640K RAM. Hard drive recommended.
*Suggested retail price.

Circle 33 on reader service card

WHERE TO BUY

AboveBoard Plus

Intel Corp.
5200 N.E. Elam Young
Pkwy., Mailstop C03-04
Hillsboro, OR
97124-6497
800/538-3373,
800/525-3019 (fax)
Reader service no. 680

Advanced NetWare/286

Novell, Inc.
122 East 1700 South
Provo, UT 84606
800/526-5463,
801/429-5533
Reader service no. 681

Allways 1.2

Funk Software
222 Third St.
Cambridge, MA
02142
800/822-3865,
617/497-6339,
617/547-1031 (fax)
Reader service no. 682

AutoCAD

Autodesk, Inc.
2320 Marinship Way
Sausalito, CA 94965
800/445-5415,
415/332-2344,
415/331-8093 (fax)
Reader service no. 683

Clipper

Nantucket Corp.
12555 W. Jefferson
Blvd. #300
Los Angeles, CA
90066
213/390-7923,
213/397-5469 (fax)
Reader service no. 684

Compaq Deskpro 386/33

Compaq Computer
Corp.
P.O. Box 692000
Houston, TX 77269-
2000; 800/231-
0900, 713/370-0670
Reader service no. 685

Compaq LTE/286

Compaq Computer
Corp.
Reader service no. 686

Compaq Portable 386

Compaq Computer
Corp.
Reader service no. 687

CompuServe

CompuServe
Information Service
5000 Arlington Centre
Blvd.
P.O. Box 20212
Columbus, OH 43220
800/848-8199
Reader service no. 645

DacEasy Accounting

DacEasy Inc.
17950 Preston Rd.
#800
Dallas, TX 75252
800/877-8088, 214/
248-0305, 416/940-
3314 Canada
Reader service no. 688

dBASE IV

Ashton-Tate
20101 Hamilton Ave.
Torrance, CA 90509-
9972; 213/329-8000,
213/538-7996 (fax)
Reader service no. 689

Grammatik

Reference Software
Int'l
330 Townsend St.
#123
San Francisco, CA
94107; 800/872-
9933, 415/541-0222,
415/541-0509 (fax)
Reader service no. 690

Harvard Graphics

Software Publishing
Corp.
1901 Landings Dr.
Mountain View, CA
94043; 415/962-8910
Reader service no. 691

HP LaserJet Series II

Hewlett-Packard
Customer Information
Center
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900
Reader service no. 692

HP LaserJet Series IIP

Hewlett-Packard
Reader service no. 693

HP ScanJet Plus

Hewlett-Packard
Reader service no. 694

Microsoft Flight Simulator

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-
6399; 800/426-9400,
206/883-8101 (fax)
Reader service no. 695

Microsoft Mouse

Microsoft Corp.
Reader service no. 696

Microsoft Works

Microsoft Corp.
Reader service no. 697

NEC MultiSync 3D

NEC Technologies
1255 Michael Dr.
Wood Dale, IL 60191
800/366-3632, 800/
268-3997 Canada
Reader service no. 698

1-2-3

Lotus Development
Corp.
55 Cambridge Pkwy.
Cambridge, MA
02142; 800/343-5414,
617/577-8500
Reader service no. 699

PageMaker

Aldus Corp.
411 First Ave. S
Seattle, WA 98104
206/628-2320,
206/343-3360 (fax)
Reader service no. 700

Panasonic KX-P1124

Panasonic Communi-
cations and Systems
Computer Products
Division
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086,
201/348-7000
Reader service no. 701

PC Connection

6 Mill St.
Marlow, NH 03456
800/243-8088,
603/446-7721,

603/446-7791 (fax)

Reader service no. 702

PC-DOS

IBM
1133 Westchester Ave.
White Plains, NY
10604
800/426-2468
Reader service no. 703

PC Paintbrush

Z-Soft Corp.
450 Franklin Rd. #100
Marietta, GA 30067
404/428-0008,
404/427-1150 (fax)
Reader service no. 704

PC Tools Deluxe

Central Point Software
15220 N.W.
Greenbrier Pkwy.
#200
Beaverton, OR 97006
800/888-8199,
503/690-8090,
503/690-5187 (fax)
Reader service no. 705

Procomm Plus

Datastorm
Technologies
3212 Lemone
Industrial Blvd.
P.O. Box 1471
Columbia, MO 65205
800/333-4559,
314/443-3282,
314/875-0595 (fax)
Reader service no. 620

Q&A 3.0

Symantec
Customer Service
10201 Torre Ave.
Cupertino, CA 95014
408/253-9600
Reader service no. 706

Quattro Pro

Borland Int'l
1800 Green Hills Rd.
Scotts Valley, CA
95066-0001
800/331-0877,
408/438-8400,
408/439-9103 (fax)
Reader service no. 707

Quicken 3.0

Intuit
155 Linfield Ave.
Menlo Park, CA 94025
800/624-8742,
415/322-0573

Seagate ST251-1

Seagate Technology
920 Disc Dr.
Scotts Valley, CA
95067
800/468-3472,
408/438-6550,
408/438-7852 (fax)
Reader service no. 708

SideKick Plus

Borland Int'l
Reader service no. 709

Smartmodem 2400

Hayes Microcomputer
Products, Inc.
P.O. Box 105203
Atlanta, GA 30348
404/441-1617,
404/441-1213,
404/449-0239 (fax)
Reader service no. 710

Time Line

Symantec
Reader service no. 712

Token-Ring

IBM
Reader service no. 713

Turbo Pascal

Borland Int'l
Reader service no. 714

TurboTax

Chipsoft, Inc.
5045 Shoreham Pl.
San Diego, CA 92122
800/782-1120,
619/453-8722,
619/453-1367 (fax)
Reader service no. 715

VGA Wonder

ATI Technologies Inc.
3761 Victoria Park
Ave.
Scarborough, Ontario
M1W 3S2 Canada
416/756-0718,
416/756-0720 (fax)
Reader service no. 716

WordPerfect

WordPerfect Corp.
1555 N. Technology
Way
Orem, UT 84057
800/451-5151,
801/225-5000,
801/222-5077
Reader service no. 717

The Truth About Print Spoolers!

DON'T BE FOOLED BY CHEAP IMITATIONS!

Before you waste your money on inferior products, check out PrintQ and see why it's the most compatible, easiest-to-use, most cost-effective print spooler available — the very best, guaranteed!

Only PrintQ provides **complete** control of all your printer and plotter jobs.

Only PrintQ has been supporting its customers for over seven years.

Only PrintQ is **truly** saving time and increasing productivity for hundreds of thousands of users.

Only PrintQ has been called "The Rolls Royce of Print Spoolers" by PC Magazine.

Only PrintQ, now in its fourth generation, is constantly being enhanced to offer cost effective upgrades. And, now available, **PrintQ® LAN** — Editor's Choice, PC Magazine, 1990.

GUARANTEED!*

Unlike unproven, cut-rate imitations, **Only PrintQ** is backed by a company with a solid history of quality and performance at a fair price. So before

wasting good money on bad products, try PrintQ — the proven print spooler that really works. If not fully satisfied, return it within 30 days for a full refund. **Order now** — call toll-free:

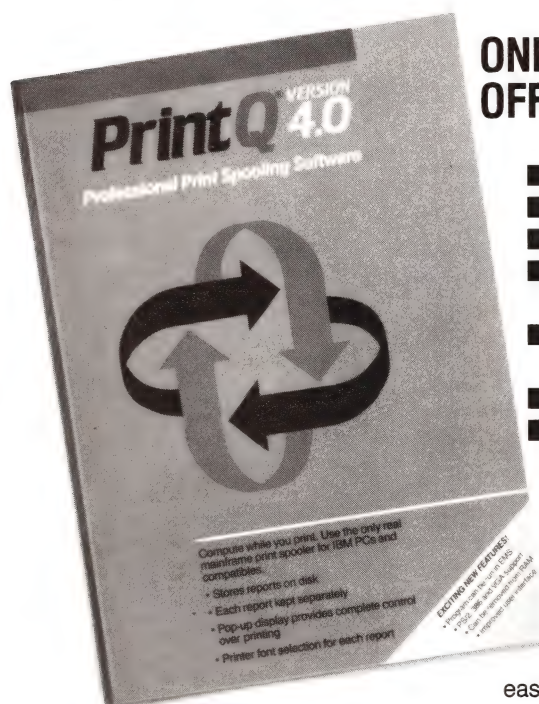
1-800-346-7638

or 201-584-8466

or see your local dealer.

Same-day shipping on U.S. phone orders.

*Dealer guarantees may differ.



\$149⁰⁰

(Canada add \$10.00, other foreign add \$20.00)

ONLY PRINTQ, THE ORIGINAL PC PRINT SPOOLER OFFERS ALL THESE VALUE-ADDED FEATURES!

- Runs in only 11KB conventional RAM with EMS
- Completely programmable
- Spools from COM (serial) and LPT (parallel) ports
- Excellent for desktop publishing (including Ventura, Pagemaker, etc.)
- Great for laptops. Spools reports to disk to be printed out automatically whenever a printer is connected
- Ideal for CAD and plotters
- Real full function LAN version available. (Editor's Choice — PC Magazine)

Plus ■ Works with DOS Version 2.x, 3.x, 4.x ■ Multiple queues for report archiving ■ Uses interrupts to drive parallel and serial printers and plotters ■ "Pop-up" status display maximizes ease-of-use through full screen displays, HiLite bars, tagging, menus, auto prompting and help. ■ Spooled reports can be exported to other programs (ASCII files) ■ Powerful forms alignment makes working with preprinted forms easier. ■ Minimizes forms changes by grouping similar documents ■ Menu driven printer control code selection (pitch, portrait or landscape, etc.). ■ Automatic compression of spooled files. ■ 100% software, PrintQ spools to disk not RAM and installs in seconds. ■ Works with virtually all software. ■ **And much, much more!**

Corporate Licensing Available.

© 1990 Software Directions, Inc.

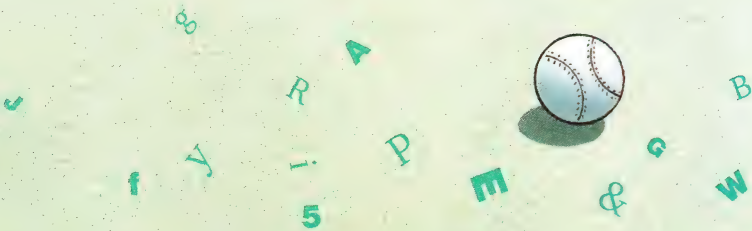
SOFTWARE DIRECTIONS

Software Directions, Inc., 1572 Sussex Turnpike, Randolph, NJ 07869

Circle 304 on reader service card



A MAJOR BREAKTHROUGH FOR WINDOWS USERS.



Introducing FaceLift™ software from Bitstream®. For the first time ever, you can get near laser quality documents from



Without
Bitstream
FaceLift

a dot matrix printer.

Designed to enhance Microsoft® Windows,™

FaceLift enables you

to make any size type instantly.

And it comes with 13 different typefaces. The characters you

see on the screen appear the way they'll look when printed.

So you can go from rough to readable as fast as it takes to

read this sentence. FaceLift is

that quick and easy to use. And affordable.

Windows makes you look good. Now,

FaceLift makes you look better.

Another home run from the leader in PC type.



With
Bitstream
FaceLift

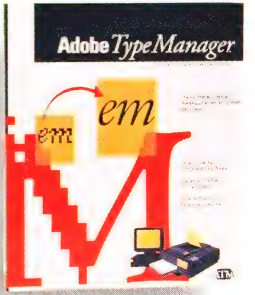
FaceLift works with Windows-supported monitors, dot matrix and laser printers.

*To order, call **1.800.522.FONT** or see your local dealer.*

Bitstream

THE LEADER IN PC TYPE

For a single solution,



Adobe Systems ... NCP
7547 ☐ **Adobe Type Manager for Windows**—Automatically cleans up the jagged or stick figure type displayed on your screen, as well as text printed from dot matrix printers. Includes 13 scalable fonts. \$59.

- ☐ 3 1/2" format available from us. Specify when ordering.
☐ package includes both 5 1/4" and 3 1/2" disks.
☐ 3 1/2" format available from manufacturer by request. Call us for details.
 CP—copy-protected; NCP—not copy-protected.

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We only carry the latest versions of products. Version numbers in our ads are current at press time.

Products listed here in red are Microsoft Windows Applications.



RightSoft ... NCP
4155 ☐ **RightWriter 4.0**—Now available! Premier grammar and style checker with more than 5,500 rules. Works within WordPerfect, Multimate, Microsoft Word, WordStar, Professional Write and Q&A Write... \$55.

- Adobe Systems ... NCP**
6591 ☐ **Illustrator Windows 1.0** \$279.
7547 ☐ **Adobe Type Manager for Windows** 59.
6590 ☐ **Streamline Windows 1.0** 229.
7392 ☐ **Adobe PostScript Cartridge** 249.
 (Entire Adobe Type Library, from 1 to 133 is available. Call for more information.)
Aldus ... NCP
1332 ☐ **PageMaker 3.01** 499.
Alpha Software ... NCP
5104 ☐ **Alpha Four 1.1** 319.
Application Techniques ... NCP
1214 ☐ **Pizazz Plus 2.0** 69.
Ashton-Tate ... NCP
4450 ☐ **dBASE IV 1.1** 499.
Asymetrix ... NCP
7384 **Toolbook 1.0 for Windows** 309.
Autodesk ... NCP
4519 ☐ **Autosketch 2.0** 95.
Avery ... NCP
6006 ☐ **Label Pro 1.0** 49.
7336 ☐ **Label Pro 1.0 for Dot Matrix** 49.



Avery ... NCP
 Fast & easy label printing. Design labels using special fonts, designs & clip-art. Includes pre-set layouts for Avery brand labels.
6006 ☐ **Label Pro 1.0 (Laser)** \$49.
7336 ☐ **Label Pro 1.0 for Dot Matrix** 49.

- Bitstream ... NCP**
7568 ☐ **FaceLift 1.0** 59.
☐ Collections: Newsletters, Flyers, Books & Manuals, Reports and Proposals, Presentations or Spreadsheets each 129.
☐ Fontware each 89.
Borland International ... NCP
7357 ☐ **Turbo C++ 1.0 Professional** 159.
7356 ☐ **Turbo Pascal Professional 2nd Ed.** 179.
6242 ☐ **Quattro Pro 1.0** 325.
1514 ☐ **Paradox 3.0** 469.
Brightbill-Roberts ... NCP
5408 ☐ **Hyperpad 2.0** 85.
Broderbund ... CP
1434 ☐ **New Print Shop (NCP)** 39.
 From Access Softek
7288 ☐ **Prompt 1.0 for Windows** 79.
7289 ☐ **Dragnet 1.0 for Windows** 89.
ButtonWare ... NCP
6419 ☐ **PC-File 5.0** 75.
Caere ... NCP
6004 ☐ **Omnipage 386 2.1** 599.

- Central Point ... NCP**
5039 ☐ **PC Tools Deluxe 6.0** \$89.
5038 ☐ **Copy II PC 5.0** 27.
Checkfree
6360 **CheckFree (electronic checking sv.)** . 25.
Chronos Software ... NCP
4387 ☐ **Who•What•When 2.0** 179.
CompuServe
7546 **DOS Membership Kit** 23.
Concentric Data Systems ... NCP
6575 ☐ **R & R Relational Report Writer 3B** 109.
Corel Systems ... NCP
5506 ☐ **CorelDRAW! 1.2** 329.
Crosstalk Communications ... NCP
2908 ☐ **Crosstalk XVI 3.71** 119.
5611 ☐ **Crosstalk for Windows 1.1** 129.
Custom Applications ... NCP
7474 ☐ **Freedom of Press 2.2** 255.
Data Storm ... NCP
4798 ☐ **PROCOMM PLUS 1.1** 65.
Delrina Technology ... NCP
4325 ☐ **PerFORM 2.1 (\$30 rebate!)** 159.
7351 ☐ **PerFORMPRO 1.0 for Windows** 299.
Digital Composition Systems ... NCP
6799 ☐ **db Publisher 1.0 for Ventura** . . . 149.
5th Generation ... NCP
7725 ☐ **Direct Access 5.0** 59.
5504 ☐ **Brooklyn Bridge 3.0** 79.
2762 ☐ **Mace Utilities 1990** 99.
3950 ☐ **Fastback Plus 2.1** 119.
FNN Data Broadcasting
7005 ☐ **NewsReal 1.0** 99.
FormWorx ... NCP
5810 ☐ **FormWorx with Fill & File 2.5** 85.
7311 ☐ **Form Publisher for Windows 1.2** 145.
Fox Software ... NCP
6188 ☐ **FoxPro 1.02** 489.
6773 ☐ **FoxPro Network Version 1.02** . . . 669.
Franklin Software ... NCP
7071 ☐ **Language Master 2.0** 59.
7416 ☐ **Language Master 3.0 for Windows** 59.
Funk Software ... NCP
2228 ☐ **Sideways 3.21** 42.
7380 ☐ **P.D. Queue 1.0 (print spooler)** . . . 55.

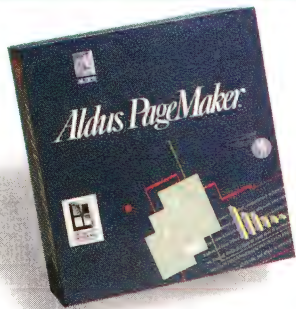


Corel Systems ... NCP
5506 ☐ **CorelDRAW! 1.2**—The world's leading PC illustration software now comes with even more value: CorelTRACE, over 100 typefaces, over 300 clip-art images, a Pantone license—all bundled in for free \$329.

Or doubled resolution,

Generic Software ... NCP		
2265	Generic CADD Level 3 1.1.3.	\$225.
Great American Software ... NCP		
4880	One Write Plus Acct. Sys. 2.06	179.
5825	Money Matters 1.0.	55.
Harvard Associates ... NCP		
2324	PC Logo 3.0	59.
hDC Computer Corp. ... NCP		
7389	Windows Express 3.0	55.
7383	First Apps 1.0	55.
Hilgraeve ... NCP		
2323	HyperACCESS/5 1.1 (DOS & OS/2)	115.
IBM ... NCP		
6599	Current 1.1	239.
Individual Software ... NCP		
6222	Resume Maker 1.1	29.
Inset Systems ... NCP		
7298	Hijaak 1.1	85.
7300	Inset Plus Hijaak	99.
Intuit ... NCP		
2426	Quicken 3.0	39.
Isogon ... NCP		
7478	FontSpace 1.16	59.
Laser Go ... NCP		
7636	Go Script 3.0	99.
7635	Go Script Plus 3.0	189.
LaserTools ... NCP		
6882	PrintCache 2.3	99.
Lord Publishing ... NCP		
5191	Ronstadt's Financials 1.02	75.
Lotus ... NCP		
5417	1-2-3 3.0	call
5653	1-2-3 2.2	349.
5134	Magellan 2.0	119.
MECA ... NCP		
2798	Managing Your Money 6.0	135.
7002	Home Lawyer 1.0	69.
Microcom ... NCP		
6234	CarbonCopy Plus 5.2	119.
7024	CarbonCopy Plus+ Host 5.2	199.
Micrografix ... NCP		
7683	Charisma 1.0	349.
Micro Logic ... NCP		
6787	Info Select 1.1	55.

Microlytics ... NCP		
2731	GOfer 2.0	\$45.
Microsoft ... NCP		
7010	Windows 3.0	99.
7388	Project for Windows 1.0	469.
7387	PowerPoint for Windows 1.0	329.
2904	Works 2.0	99.
2901	Word 5.0	209.
6195	Word for Windows 1.0	329.
2856	Excel 2.1	329.
2894	QuickBASIC 4.5	69.
2895	QuickC 2.5	69.
2853	C Compiler 6.0	339.
Multisoft ... NCP		
4925	PC-Kwik Power Pak 1.5	79.
Nolo Press ... NCP		
2982	WillMaker 4.0	39.
Norton-Lambert ... NCP		
4928	Close-Up Customer 3.0	135.
4929	Close-Up Support 3.0	165.
5421	Close-Up LAN (16 user)	639.



Aldus ... NCP
1332 □ *PageMaker 3.01*—Communicate professionally with quality brochures, reports, presentations, etc.—all under Windows 3.0! (80286 or higher recommended)..... **\$499.**

PC Globe ... NCP		
5902	PC Globe 3.0	39.
5900	PC USA 1.0	39.
Personics ... NCP		
4384	Ultravision 2.0	79.
7048	Monarch 1.0 (Data Mgmt. Tool)	319.
Precision Software ... NCP		
6600	Superbase 4 for Windows 1.2	469.
Qualitas ... NCP		
7539	386MAX 5.0	75.
Quarterdeck ... NCP		
6422	QRAM 1.0	49.
3221	Expanded Memory Mgr. 386 5.1	59.
3220	DESQView 2.26	79.
4586	DESQView 386 1.1	129.

1-800/243-8088

MMC
Member of the Direct Marketing Association, Inc.

PC Connection
 6 Mill Street
 Marlow, NH 03456

770W

SALES 603/446-7721 FAX 603/446-7791

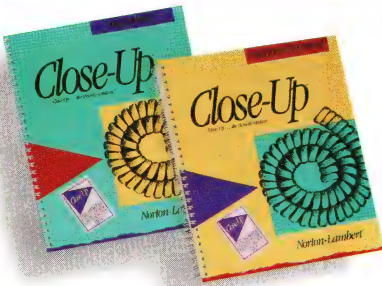


Bitstream ... NCP
7568 □ *FaceLift 1.0*—Fast & easy-to-use, scales screen & printer fonts to any size. 13 type-faces to give you professional documents instantly. Superb laser output & near laser-quality output for dot matrix printers. **\$59.**

Reality Technologies ... NCP		
6572	WealthBuilder 1.1	145.
Reference Software ... NCP		
4396	Grammatik IV 1.0	52.
7483	Grammatik for Windows 1.0	52.
Revolution Software ... NCP		
4480	VGA Dimmer 2.01 (screen saver)	19.
RightSoft ... NCP		
4155	RightWriter 4.0	55.
Samna ... NCP		
5799	Ami Professional 1.2	309.
Softlogic Solutions ... NCP		
3542	Software Carousel 4.0	55.
Software Publishing ... NCP		
4602	PFS:Preface 1.0	49.
3499	PFS:First Publisher 3.0	99.
3478	PFS:First Choice 3.02	105.
3496	Professional Write 2.2	165.
3482	Harvard Graphics 2.3	339.
Spinnaker ... NCP		
7604	Plus for Windows 1.0	289.

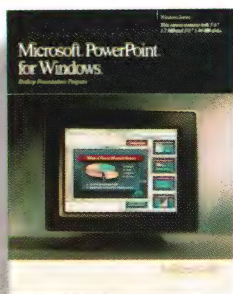


Intel ... 5 years
Above Boards—FREE Quarterdeck QRAM and Manifest with any Above Board or piggyback, now through December 31, 1990! see Intel listing for prices.



Norton-Lambert ... NCP
 Award-winning Close-Up connects two PCs via modem, linking screens & keyboards. Ideal for remote support & training.
 4928 □ *Close-Up Customer/Terminal 3.0* **\$135.**
 4929 □ *Close-Up Support/ACS 3.0* **165.**

Or to triple the speed



Microsoft ... NCP

7387 ☐ **PowerPoint for Windows 1.0**—Create powerful and effective presentations under the easy-to-use Windows interface. Includes charting, word processing, and over 400 clip-art images. \$329.

Symantec ... NCP

- 3152 ☐ Norton Commander 3.0. 99.
- 3146 ☐ The Norton Utilities 5.0. 119.
- 6397 ☐ The Norton Backup 1.1. 99.
- 3425 ☐ Q&A 3.0. 229.
- 3431 ☐ Timeline 4.0. 469.

Systems Compatibility ... NCP

- 6564 ☐ Software Bridge 4.1. 79.

TIMESLIPS ... NCP

- 2987 ☐ Timeslips III 3.4. 169.
- 6994 ☐ PercentEdge 1.0. 69.

Timeworks ... NCP

- 6253 ☐ Publish-It! 1.1. 115.

TOPS ... NCP

- 6675 ☐ TOPS Network Bundle 3.0. 159.
- 3720 Flashcard 2.1 (AppleTalk network card; 1 year warranty). 155.

Touchstone Software ... NCP

- 7420 ☐ Check It 2.1. 89.

Traveling Software ... NCP

- 5179 ☐ LapLink III 3.0. 95.



Logitech ... limited lifetime

7768 ☐ **C9 Mouse with Windows**—Two winning products at one low price! Enjoy the latest in graphical environments with Windows 3.0 & powerful yet affordable Logitech serial mouse. A winning team to get your work done. \$149.

- 3561 ☐ **True BASIC ... NCP**
- ☐ True BASIC 2.1. \$52.
- 6771 ☐ **Vericomp ... NCP**
- ☐ Memory Master 1.1. 45.
- 6246 ☐ **Volkswriter ... NCP**
- ☐ Volkswriter 4 1.02. 109.
- ☐ **West Lake Data Corp. ... NCP**
- ☐ PC-FullBak+ 1.12. 52.
- 7574 ☐ PathMinder+ 1.0. 79.
- 7575 ☐ ValuePak (includes 4 programs). . . 69.
- ☐ **WordPerfect Corp. ... NCP**
- ☐ LetterPerfect 1.0. 135.
- 3804 ☐ WordPerfect 5.1. 265.
- 6685 ☐ DrawPerfect 1.1. 279.
- ☐ **WordStar International ... NCP**
- 6791 ☐ WordStar Prof. 6.0. 279.
- ☐ **Xerox ... NCP**
- 3812 ☐ Ventura Publisher Gold 3.0. 559.
- ☐ **XTREE ... NCP**
- 6161 ☐ XTreePro Gold 1.4. 75.
- ☐ **ZSoft ... NCP**
- 7016 ☐ PC Paintbrush IV Plus 1.0. 119.
- 7014 ☐ PC Paintbrush Plus for Windows 1.12. 89.



Epson ... 1 year

7774 ☐ **Equity LT386SX Laptop**—Gives you desktop performance in a very portable package. Includes 2 Mb of RAM and VGA screen resolution. Optional hard drives provide 20 or 40 Mb of storage. . . . \$3069.

RECREATIONAL/EDUCATIONAL

- ☐ **Broderbund ... CP**
- 5701 ☐ Where/Time Carmen Sandiego? . 32.
- 5851 ☐ SimCity. 33.
- ☐ **Electronic Arts ... NCP**
- 5804 ☐ Deluxe Paint II (Enhanced). 89.
- ☐ **Microsoft ... NCP**
- 2858 ☐ Flight Simulator 4.0. 39.
- ☐ **Penton Overseas ... NCP**
- ☐ VocabuLearn/ce Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese). each 39.
- ☐ **Sierra On-Line ... CP**
- 6023 ☐ Leisure Suit Larry III. 39.
- 6796 ☐ Codename: Iceman. 39.
- 6972 ☐ Conquests of Camelot. 39.
- ☐ **Software Toolworks ... NCP**
- 6436 ☐ Hunt for Red October. 20.
- 4659 ☐ Chessmaster 2100 (CP). 35.



Intel ... 5 years

7552 ☐ **NetPort**—New! Provides an easy and compact solution for connecting printers directly to Thin-wire Ethernet LAN's running NetWare 2.1x or NetWare 286. Install in minutes at any T-connector. \$489.

Stone & Assoc. ... NCP

- 7564 ☐ Young Math (ages 5 to 8). 22.
- 3439 ☐ 2nd Math (ages 7 to 16). 27.

True BASIC, Inc. ... NCP

- ☐ Kemeny/Kurtz Math Series. each 45.

HARDWARE

Manufacturer's standard limited warranty period for items shown is listed after each company name. Some products in their line may have different warranty periods.

American Power ... 2 years

- 7108 APC Smart-UPS 400. 339.
- 6811 360SX (stand-by power source). . . 255.
- 7107 450AT (stand-by power source). . . 339.
- 7106 520ES (stand-by power source). . . 399.
- 7105 600LS (stand-by power source). . . 469.

AST Research ... 2 years

- 1299 SixPakPlus 384k C/S/P. 179.
- 6795 SixPak 286 512k. 209.
- 4107 RAMpage Plus 286 512k. 419.
- 6980 VGA Plus (w/512K) (800 x 600 res). 229.

Boca Research ... 5 years

- 7001 BOCARAM/AT PLUS (0-8 Meg) (LIM 4.0 extended). 125.
- 7061 BOCARAM/XT 0K (0-2 Meg, LIM 4.0). 99.
- 7135 TophAT (16-bit backfill 512K to 640K). 99.
- 6998 I/O Board for AT. 59.
- 6999 I/O Board for Microchannel S/S/P. 109.
- 6995 SuperVGA (800 x 600, 16/8 bit). . . 115.
- 7026 1024 VGA (16 bit non-interlaced). . 149.

Bravo Communications

- 7400 2 Pos. Laser Compatible Switch Box 109.

Brother International ... 1 year

- 5787 HL-8e Laser Printer (HP2 comp.). 1399.

CH Products ... 1 year

- 7341 Gamecard III Plus (for Microchannel PS/2s). 49.
- 7340 Flight Stick. 49.
- 7345 RollerMouse (Trackball) serial 85. bus 99.

Compucable ... 2 years

- 1604 2-Position switch box. 25.



PC Clout.

**Diamonds in the rough.
(Or, why you're always safe with us.)**

An early fall afternoon. The sky is bluer than the IBM logo and there's enough electricity in the air to light up Yankee Stadium. You could be at Candlestick, Wrigley, or Fenway, munching a frank, and yelling, "It's outta here!" But the players are suspiciously furry and there's a level of play you rarely see anymore, even in the big leagues. Welcome to the silicon sandlot of Marlow, NH (pop. 563). Where the only game that's played is hardball. And where we don't take American Express. (Just VISA, MC, and Corporate P.O.s.)

Students of the game know that when it comes to PC mail order we

wrote the book: toll-free tech support, latest versions only, and price lists complete with up-to-date stats on warranties, disk size, and copy protection. Give us a call next time you need to know the score on any PC product. We'll never leave you out in left field.

Get into the swing of things.

We have a reputation for always going to bat for our customers. Well now you can go to bat for yourself anytime you like with your very own 32" "R.G. Johnson" bat, custom-made and hand-crafted in New England from solid ash by R.G.'s grandson Bob. This cracker-jack offer is free to everyone who places an order of \$1000 or more between now and November 30.



Go for the fences with the PC Connection Bat featuring our own heavy-hitting mascots. Offer not available to accounts on net terms. One per customer.

PC CONNECTION®

© COPYRIGHT PC CONNECTION, INC., 1990. PC CONNECTION AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH.

Hit a home run with us.

Reflection Technology ... 1 year

7127 Private Eye (virtual display) \$499.

SAFE Power Systems ... 2 years

4562 Safe 425W (standby power bkup) . . . 329.

6747 Safe 400S (new) 399.

SOTA Technology ... 2 years

5111 SOTA 286i-12 (12 MHz accelerator) 269.

5402 SOTA 386i-16 (16 MHz accelerator) 389.

Targus ... lifetime

7028 Foliopac 1 79.

4899 Nylon Laptop carrying case 55.

6037 Premier leather carrying case 199.

TheComplete PC ... 2 years

5140 TheComplete Page Scanner 549.

5828 TheComplete Communicator 559.

Tripp Lite ... 2 years

6199 Isobar 4-6 (4 outlets, 6 ft. cord) . . . 49.

6200 Isobar 6-6 (6 outlets, 6 ft. cord) . . . 59.

Video 7 ... 7 years

5883 1024i VGA (includes 512k) 269.

4931 VRAM VGA 512k 379.

(w/controller and cables, 65 ms) . \$269.

4554 40 Meg Int. HD ST251-1 (28 ms) . . 329.

TEAC ... 1 year

4951 720k Drive (specify XT or AT, 3 1/2") . 75.

4670 1.44 Meg Drive for PC/XT (3 1/2") . . 89.

4326 1.44 Meg Drive for AT (includes Bastech software utilities, 3 1/2" copy prot.) . 109.

DISKS

Maxell ... lifetime

2789 5 1/4" MD2-D 360k Disks (Qty. 10) . . . 12.



TheComplete PC ... 2 years

5828 TheComplete Communicator—It's a 9600 bps fax. It's a 2400 bps modem. It's a sophisticated voice messaging and processing system. It's a scanner port. It's TheComplete solution! \$559.

MEMORY

6556 256k DRAMs (100 nanosecond) . . . call

3248 256k DRAMs (120 nanosecond) . . . call

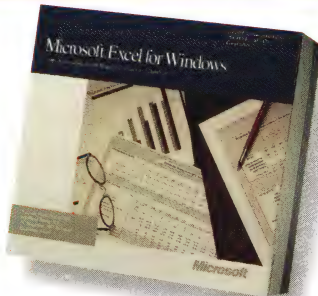
4366 1 Meg x 9 SIMMs (100 nanosecond) call

5510 1 Meg x 9 SIMMs (80 nanosecond) call

5746 1 Meg Chips (80 nanosecond) call

OUR POLICY

- We accept VISA and MASTERCARD only.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- COD max. \$1000. Cash, cashier's check, or money order.
- 120 day limited warranty on all products.*
- To order, call us Monday through Friday 8:00 AM to 1:00 AM, or Saturday 9:00 AM to 5:30 PM. You can call our business offices at 603/446-3383 Monday through Friday 9:00 AM to 5:30 PM.



Microsoft ... NCP

2856 Excel for Windows 2.1—Powerful spreadsheet featuring high-quality graphics and all the benefits of the Windows interface. Display and link multiple data files on screen simultaneously \$329.

DRIVES

IOmega ... 1 year

5116 Bernoulli II Single 44 Meg Internal 995.

5113 44 Meg Cartridge Tripak (5 1/4") . . . 249.

2499 PC2 Controller 169.

7551 Bernoulli II Transportable 44 Meg . . 997.

Mountain Computer ... 1 year

2917 40-60 Meg Internal Tape Drive . . . 299.

5502 83-152M Ext. Tape Drive 799.

5500 83-152M Int. Tape Drive 629.

5190 DC2000 Pre-formatted Cartridges ea. 35.

Pacific Rim ... 1 year

5010 1.2 Meg External (for PS/2's) 215.

6602 1.44 External (for PC/XT/AT) 239.

Plus Development ... 2 years

6425 Hardcard II 40 Meg (19 ms) 599.

6424 Hardcard II 80 Meg (19 ms) 699.

Seagate ... 1 year

2285 20 Meg Int. Hard Drive ST225

(w/controller and cables, 65 ms) . . . 255.

2286 30 Meg Int. Hard Drive ST238R



Practical Peripherals ... 5 years

5285 2400SA MNP—Fully supports error-free MNP Level 5 data transmission, giving you more confidence in your communications. Also supports Hayes compatible 2400 bps standard operation. \$209.

2790 5 1/4" MD2-HD 1.2Mb Disks (Qty. 10) . . 19.

2792 3 1/2" DS/DD 720k Diskettes (Qty. 10) . . 14.

2793 3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10) 27.

Sony ... lifetime

3291 5 1/4" DS/DD 360k Disks (Qty. 10) . . . 10.

3292 5 1/4" DS/HD 1.2Mb Disks (Qty. 10) . . 19.

3297 3 1/2" DS/DD 720k Diskettes (Qty. 10) . . 13.

3298 3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10) 22.

6659 QD 2000 Tape Cartridge 19.



Seagate ... 1 year

4554 ST251-1 40 Meg Hard Drive (28ms)—Quiet and reliable storage space for your system. Complete kit includes everything needed to get up and running \$329.

SHIPPING

Note: Accounts on net terms pay actual shipping.

Continental US:

- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
- For all other items, add \$3 per order to cover UPS Shipping. For such items, we automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground.

Hawaii:

- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add \$3 per order.

Alaska and outside Continental US:

- Call 603/446-7721 for information.

PC CONNECTION®

© COPYRIGHT PC CONNECTION, INC., 1990. PC CONNECTION, PCTV AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH. ALL OTHER TRADEMARKS REMAIN THE PROPERTY OF THEIR RESPECTIVE COMPANIES.

of software executions.



Intel ... 5 years

MNP Modems—Feature data compression, error correction, & a built-in buffer providing compatibility with OS/2.

6421 2400B MNP Internal Modem. \$199.
6420 2400EX MNP Modem. 229.

Curtis ... lifetime

1707 Ruby SPF-2 (6 outlets) 55.
1708 Ruby-Plus SPF-2 Plus 65.
7358 Command Center 93.
Glass Filter Plus (specify size) . . ea. 65.

Datadesk ... 3 years

6901 Switchboard 175.

Epson ... 1 year

We are an authorized Epson Service Center.

1906 FX-850 (80 col., 264 cps, 9 pin) . . . call
1904 FX-1050 (136 col., 264 cps, 9 pin) . . call
5183 LQ-510 (80 col., 180 cps, 24 pin) . . call
1930 LQ-850 (80 col., 264 cps, 24 pin) . . call
6765 LQ-1010 (136 col., 180 cps, 24 pin) call
1917 LQ-1050 (136 col., 264 cps, 24 pin) call
5184 LX-810 (80 col., 180 cps, 9 pin) . . . call
1052 Printer-to-IBM cable (6 feet) 15.
7775 Equity LT-286e Laptop 2297.
7774 Equity LT-386SX Laptop 3069.
Removable Hard Drives for Epson Laptops
7776 20 Meg. . 499. 7777 40 Meg. . 699.

5th Generation ... 1 year

7157 Logical Connection Plus 512k. . . . 599.

Hayes ... 2 years

2307 Smartmodem 2400. 349.

7391 Ultra 9600 Modem 899.

Hewlett-Packard ... 1 year

6754 LaserJet III (w/toner) 1699.

6582 LaserJet IIP (w/toner) 1069.

Intel ... 5 years

6421 2400B MNP Internal Modem 199.

2352 2400B Internal Modem 2 (for PS/2) 249.

5119 2400 Baud External Modem. 179.

6420 2400EX MNP Modem. 229.

2346 Inboard 386/PC w/1 Meg (w/free Ami) 519.

4266 Above Board Plus 512k. 369.

4267 Above Board Plus I/O 512k. 399.

5336 Above Board Plus 8 2 Meg. 599.

5342 Above Board Plus 8 I/O 2 Meg. . . 629.

4272 Above Board 2 Plus 512k. 469.

5396 Above Board MC 32 0k. 359.

7782 SatisFAXtion. 399.

7552 NetPort. 489.

MATH COPROCESSORS

7385 80287XL (for 80286 CPU's) \$229.
4750 80387SX (for 80386SX CPU's) . . . 309.
2371 80387 (for 16 MHz 80386 CPU's) . . 349.
2372 80387-20 (for 20 MHz 80386 CPU's) 399.

Keytronic ... 3 years

4518 101 Plus Keyboard 99.

Kraft ... 5 years

5800 3 button Thunder Joystick. 29.

5802 Trackball. 69.

Logitech ... limited lifetime

5464 C9 Mouse for PS/2's. 69.

7768 C9 Mouse with Windows. 149.

5151 HiREZ Mouse (C9) 85.

6029 Trackman (Trackball) serial 85. bus 89.

4297 ScanMan Plus (hand scanner) . . . 185.

Micron Technology ... 2 years

6669 Intensify 2 Meg Expansion for HP

LaserJet II (upgradeable to 4 Meg) 219.

7012 Beyond Memory Board for PS/2

Model 70 (2 Meg) 265.

Microsoft ... lifetime

2897 Mouse with Paintbrush 109.

2898 Mouse with Windows 3.0 149.



Intel ... 5 years

2346 Inboard 386/PC with Free Samna Ami—
Gives you 80386 processing power, 1 Mb
RAM, and Samna's powerful Windows-
based word processor (regularly at \$129).
30 Day Money Back Guarantee. \$519.

MicroSpeed ... 1 year

6007 PC-TRAC Trackball serial 75. bus 85.

Mouse Systems ... lifetime

5997 Trackball (1 yr. wrnty.) serial 75. bus 85.

4306 PC Mouse II w/PC Paint+ 89.

NEC ... 2 years

4799 Multisync 2A (VGA Monitor) 499.

5085 Multisync 3D Monitor 689.

Orchid Technologies ... 4 years

7512 ProDesigner VGA II (1024 x 768) . . 299.

PC Power & Cooling ... 1 year

REPLACEMENT POWER SUPPLIES

3202 Turbo Cool 150 (25° - 40° cooler) . 129.

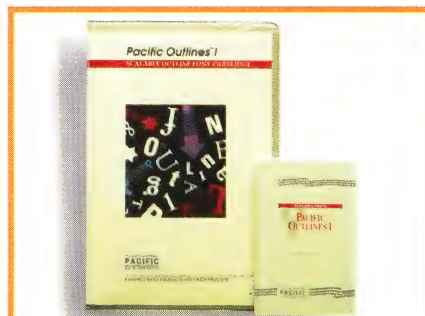
1-800/243-8088

MMC
Member
of the DataSentry Association, Inc.

PC Connection

6 Mill Street
Marlow, NH 03456

SALES 603/446-7721 FAX 603/446-7791



Pacific Data Products ... lifetime

Pacific Outlines—Turn ordinary documents
into ones with powerful impact with Pacific
Outlines I & II. Each cartridge adds over 20
scalable typefaces to your series III printer.
7632 Outlines I. \$209. 7631 Outlines II. \$209.

3200 Silencer 150 (84% noise reduction) 115.

Pacific Data Products ... 1 year

6779 25 Cartridges in One! (for LJ II, IIP, IID) 275.

7072 25 Cartridges in One! (for LJ III) 349.

Memory upgrade for LaserJet IIP/III

7054 1 Meg . . . 149. 7055 2 Meg . . . 199.

7758 3 Meg . . . 279. 7759 4 Meg . . . 339.

6839 Memory upgrade for LaserJet II

1 Meg. 179. 2 Meg. 249.

7158 Pacific Page (PostScript Cartridge for

LaserJet IIP/III) 379.

7632 Outlines I. 209. 7631 Outlines II. 209.

7634 Pacific T Memory (2MB) 219.

Practical Peripherals ... 5 years

3101 1200 Baud Internal Modem 65.

3100 1200 Baud External Modem (mini) . 77.

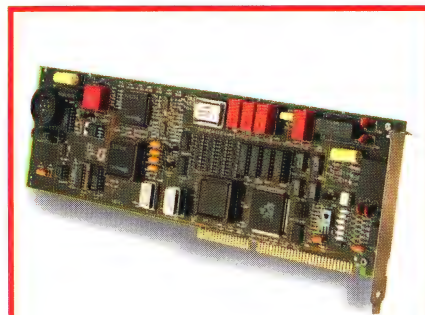
3103 2400 Baud Internal Modem 135.

3102 2400 Baud External Modem. 179.

5286 2400 Baud Int. MNP Modem (Lev. 5) 175.

5285 2400 Baud Ext. MNP Modem (Lev. 5) 209.

4542 2400 Baud Internal Modem for PS/2. 229.



Intel ... 5 years

7782 SatisFAXtion—Send and receive faxes
from within most applications using the
print command. Built-in 2400 bps MNP
modem standard. Includes coupons for free
PC Tools and Fax-It software. \$399.

PC CONNECTION®

*DEFECTIVE SOFTWARE REPLACED IMMEDIATELY. DEFECTIVE HARDWARE REPLACED OR REPAIRED AT OUR DISCRETION.



Who Pays for Tech Support?

**THE ERA OF FREE
TECHNICAL SUPPORT
IS NEARLY PAST.
BUT PC USERS DON'T
HAVE TO SETTLE
FOR SECOND-RATE
SERVICE AT
OUTRAGEOUS
RATES. HERE'S WHAT
YOU HAVE A RIGHT
TO EXPECT.**

Roberta Furger

IN THE EARLY DAYS, PC software and hardware companies set a high standard for customer support: Technical advice was free and only a phone call away. Although they didn't always live up to their promises, most companies at least paid lip service to this ideal.

But today, more and more companies are defecting from the ranks, arguing that free support is no longer a realistic expectation. And a *PC World* survey of 1000 business users, backed by extensive interviews with users and vendors, shows the gulf is broadening between what vendors are willing and able to provide and what most users have come to expect.

Vendor policies are far from consistent. In software, the biggest debate is over which services should come free: While WordPerfect Corporation provides unlimited toll-free support, Aldus, Lotus, and others offer free service only

TECHNICAL SUPPORT PROGRAMS AT A GLANCE



Software and hardware companies have mixed and matched a variety of technical support options.

Company	Free support	Toll free	900 line	Extended hours	Fee-based program	BBS	FAX
Aldus	90 days	no ¹	yes	no	yes	yes	no
Ashton-Tate	yes	no ¹	no	yes	yes	yes	yes
Borland	yes	no ¹	no	yes	yes	yes	no
Computer Associates	yes ²	no ¹	no	no ¹	yes	yes ³	no
Lotus	6 months	yes	yes ³	yes	yes	yes	no
Microsoft	yes	no	yes ⁴	yes	no	yes	no
Software Publishing	yes	no	no	no	no	yes	yes
WordPerfect	yes	yes	no	yes	no	yes	no
AST Research	yes ⁵	no	no	no	yes	yes ⁶	no
Compaq	dealer only						
Epson America	dealer only						
Hewlett-Packard	no ⁵	no	no	yes	yes	no	no
IBM	yes ⁷	no	no	no	no	yes ⁷	no
NEC Electronics	yes ⁴	no	no	yes	no	no	no

¹Fee-based plans only.

²30 days to 6 months, depending on product.

³Pilot program.

⁴For DOS questions only.

⁵Customers referred to dealers first.

⁶Informational only.

⁷For PS/1 only.

during installation and then begin to charge for calls. In hardware, the main concern is who fixes problems: Hewlett-Packard, for example, requires users to go through a dealer for technical support on its systems, but it offers a free hot line for advice about printers.

To confuse matters further, many software and hardware suppliers are experimenting with a variety of pay-for-support options, including 900 numbers, annual fees, and advanced consulting services.

So the variations on support policies are almost endless—and the fun really begins when you're faced with those nagging problems that involve products from multiple vendors. You never know what to expect when you grit your teeth and pick up the phone for the first time. That uncertainty underlines the need to investigate technical support policies thoroughly *before* you write out a check.

NEED FOR SOFTWARE EXPERTISE SOARS

Despite all the hoopla about easy-to-use software, most users find that their programs are becoming larger and more complex. At the same time, the growing interdependence of PCs with other networked machines makes computing in general more challenging every year.

Not only are thousands of new users looking to get problems resolved, but experienced users now demand a higher level of help and expertise than telephone technical support has typically offered.

"The complexity is such that we're staffing [technical support lines] with high-end, sophisticated people," says Eric Ornas, director of technical support for Borland International in Scotts Valley, California. Technical support "used to be an entry-level position where people worked hard and moved on, but it's becoming more of a career."

Increased demand for service brings with it escalating costs, say vendors,

particularly in salaries and training. According to a study published by *Softletter*, support costs total anywhere from 4 to 12 percent of sales at PC software companies. Most big software firms remain quite profitable, but "you can't provide an enhanced level of software support for free," says Mike Semegran, director of technical support services for Ashton-Tate. Ironically, though, Ashton-Tate recently switched from charging for technical support to offering a basic level of service at no cost.

NO SUCH THING AS A FREE HUNCH?

Free support is precisely what WordPerfect has built its reputation on, dedicating roughly 600 employees to customer support; see the sidebar "WordPerfect Sets a Lofty (and Costly) Standard for Service." But for many suppliers, the answer has been to start charging for technical support. Even those that still provide free support reserve the option of fee-based plans in the future—though user response has chastened companies like Ashton-Tate that tried to phase out free support.

Vendors acknowledge that users generally expect free and unlimited support. "It's something we as an industry have inculcated in the user base," says Borland's Ornas. "Users have grown up in the industry expecting free support," agrees John Archdeacon, director of customer service for Aldus in Seattle. "They don't always look around and make analogies to what's going on [in other industries]."

However, other industries don't routinely ship products that may be buggy, incomplete, complicated, and inadequately documented. So it's no surprise that users view hand-holding as one of the services vendors owe them. *PC World's* survey found that only 11 percent of the respondents opted for a pay-for-support plan with a software company, while 7 percent chose this route for hardware.

Some users comment that whether

FREE SUPPORT TOPS PC USERS' MUST-HAVE LISTS

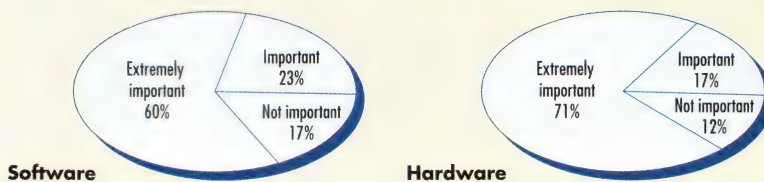


Free support during the initial installation period is what PC World readers want most, according to our survey on technical support. Continued free support is a close runner-up on the wish list. Respondents were asked to rate the importance of services on a scale of 1 to 5, with 5 being the highest.

Service	Software	Hardware
Free support during installation	4.5	4.5
Toll-free technical support	4.2	4.0
Free, unlimited support	3.8	3.7
Extended hours	3.7	3.7
Bulletin board	2.5	2.4
Fax service	2.2	2.0

Source: a survey of 1000 PC World readers.

"NO SUPPORT? NO SALE!" OUR SURVEY SAYS...



...AND BUYERS AREN'T AFRAID TO SWITCH VENDORS, EITHER



Survey respondents consider technical support one of the most important factors in their purchase decisions. When service was lacking, roughly one-quarter of the respondents demonstrated their dissatisfaction by switching to a competing product.

Source: a survey of 1000 PC World readers.

WordPerfect Sets a Lofty (and Costly) Standard for Service

WordPerfect has built an international reputation—and gained substantial market share—through its commitment to customer support. Roughly one-third of its 1800 employees are part of the company's massive customer service operation, which takes nearly 14,000 calls a day—many of which aren't even about its own products.

Last year the company installed a cable television system for monitoring caller traffic on each of the company's 12 incoming technical support lines. In their offices, several top executives have televisions for tracking support activity. With a flick of a switch, they can get an instant update on how many callers are on hold and how long the callers have been waiting. A red bar running across the screen indicates the hold time for any given queue. When the bar starts to spread across the screen, either an executive or a support manager makes calls to reallocate staff.

The elaborate monitoring system is only one of several mechanisms that en-

sure that WordPerfect continues to meet customers' high expectations. Technicians are divided into teams, each dedicated to addressing specific types of questions, such as those relating to networks, installation, and printers. An on-line data base is updated daily to give technicians ready access to reported problems and solutions.

Sometimes, though, customers aren't looking for the answer to a problem so much as a helping hand. During a recent *PC World* visit to WordPerfect, for example, one technician patiently spent 40 minutes on the line with a user updating to WordPerfect 5.1.

The company spends roughly \$9 per box of software on technical support. That's 6 percent of its overall costs, according to Dan Lunt, vice president of marketing. The phone bill alone totals nearly \$300,000 per month. "We look at that and say 'Ouch,'" Lunt admits.

Initially, this investment was considered "just something we needed to do," Lunt says. But as WordStar customers

began saying they'd switched to WordPerfect because of the support, something clicked. "We thought maybe we ought to try to make something out of this," says Lunt. "Once we began looking at technical support as a marketing tool, the money we spent on it didn't seem to matter as much."

Things haven't always gone smoothly. After the introduction of WordPerfect 5.0—a major rewrite of the program—the company was inundated with calls. "All AT&T lines into Utah were tied up for two days," Lunt recalls. The company's response was to add more phone lines and hire more technicians. WordPerfect has also started several other programs, including a bulletin board where users can post questions and download drivers and technical information.

WordPerfect's latest twist is disk jockeys. While on hold, you get ski reports in winter, weather reports year-round, and a carefully selected combination of popular music and ad spots for Word-

they'll pay is not so much a philosophical question as a matter of practicality. "I'd be willing to pay top dollar for really excellent support," says Joe Dulworth, assistant controller and MIS manager for Dickies Industrial Services in Fort Worth, Texas. "The problem is, when I've purchased technical support in the past, it was unsatisfactory. I was able to figure out problems quicker and easier than they could."

FEE-BASED POLICIES

Amidst the mounting confusion, software suppliers are experimenting, trying to find a way to provide services that will satisfy customers without eating away at profit margins. Fee-based plans, 900 numbers, and a limited sup-

port period are a few of the alternatives that companies have put into place. Each has its pluses and minuses.

Aldus was one of the first to go the fee-based route. After an initial 90-day support period, the company charges users who don't subscribe to a fee-based support plan \$15 per call. "The level of support we give is expensive, and there are several ways to pay for that," says Archdeacon. "One is to incorporate the cost into the price of the program. Our approach is that the people obtaining support ought to be those who cover the cost."

Others, though, argue that free support is still an obligation, and they scoff at 900 numbers and other pay-for-support plans. "It's clearly the wrong mes-

sage to send to customers," says Brian Bartel, product support manager for the graphics business unit at Software Publishing Corporation (SPC) in Mountain View, California. The 900 number poses a practical problem as well: Many corporations block employees from making calls to 900 numbers because of the potential for misuse.

More and more suppliers are opting for a compromise: Provide free support for new users and then, after the initial installation period, begin charging for the service. Aldus, Computer Associates, and Lotus take this tack. "Getting up and running is [users'] main concern," says Jim McMullan, Lotus's director of customer support. "The vast majority of questions users have will be

Perfect products and services. Most important are the traffic reports, which let you know what the backup is. "They add a human touch," says DJ Barbara Lee, who selects music to fit the level of traffic and the time of day. "You don't want to play anything too wild when people are waiting to get through."

As the cost of providing such services increases, many observers question how long WordPerfect can continue to provide high-quality services at no cost to customers. "When growth slows down, they're in deep trouble," says Mike Semegran, Ashton-Tate's director of technical support services.

As services are added, WordPerfect will consider offsetting costs. The new 24-hour service, for instance, doesn't come with a toll-free line. Most customers, says Lunt, are more concerned about the quality and availability of support than they are about toll charges. He adds, though, that there are no plans to change the overall scheme, because "it's well worth the investment." —R. F.



RAVEL CALL

WordPerfect recently hired disk jockeys to help entertain users who are waiting on the technical support lines. You listen to weather reports, music, ad spots on the supplier's products and services, and reports on the length of the backup. "They add a human touch," says Barbara Lee, who selects music to fit the traffic level and time of day.

addressed during the first six months."

HARDWARE CHOICES

On the hardware side, the big issue isn't advice but rather repair and who provides it. Almost without exception, vendors that sell through dealers say the retail channel should be the primary source of technical support.

"Nine out of ten times, the best place for a customer to go for support is to the dealer," says Jim Schraith, vice president of worldwide service and support for AST Research in Irvine, California. "[Dealers are] typically in the same town and more often than not were the ones who put together an integrated solution for the customer."

However, AST does provide direct

support for that tenth customer. "All documentation that ships with our products recommends that users contact their dealer. But it also tells them how to reach us directly," says Schraith.

But Compaq, IBM, and other suppliers rely solely on the dealer to provide technical support for their products. Why? "We consider the end user the customer of the reseller," says Dick Bulot, vice president of customer services for Epson America in Torrance, California. That hardly answers the question, however. Respondents ranked hardware vendors' tech support lower than that of software suppliers, and dealers' lowest of all (see the sidebar "Can You Depend on Your Dealer for Technical Support?").

ON-LINE OPTIONS

Many companies are turning to PC technology to provide better service and defray costs. Several hardware and software companies now provide some form of on-line access to technicians, as well as technical information and software updates via electronic bulletin board services (BBS's).

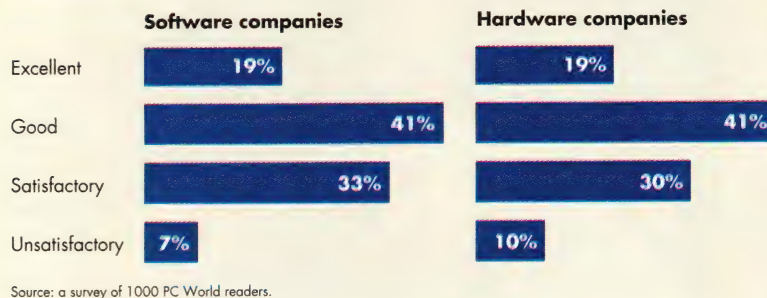
Borland is putting more and more resources into on-line services. "It's a win-win situation," says Ornas. "It's a one-to-many relationship; everyone sees the answers that are posted."

Virtually all the companies that have a BBS or that support a forum on CompuServe or GENie report high activity levels. Surprisingly, however, few report a significant drop in phone calls

OVERALL, TECH SUPPORT IS JUST FINE, READERS SAY



Although assessments of individual companies varied widely in our poll, software developers and hardware manufacturers earned high marks as a group when PC World readers were asked to rate the overall quality of technical support in the industry.



as a result. "Ninety percent of the marketplace would prefer to pick up the phone and talk to someone live," says SPC's Bartel. "Most don't understand the concept of posting a message. They feel like they'll never get help."

AST Research suffered from the opposite problem—its technicians were swamped with questions on its BBS, says Schraith. "Because we were unable to provide answers within 24 hours, we changed the format to be informational," he explains. AST now takes the most frequently asked technical support questions and posts them on the BBS in a section called "Dear AST."

Gary Staubach, vice president and general manager at DoAll Philadelphia Company, a machine tools and industrial supplies firm in Philadelphia, gets almost all his technical support via CompuServe forums. "I like the convenience," he notes. "I can go on anytime, day or night, and leave messages."

Vendors say that Staubach, who's been using PCs for over five years, is typical of the technically sophisticated user of on-line technical support services. But IBM's upcoming experiment with the Personal System/1, in which

novice users get help on line, will receive close attention. On-line service is integral to IBM's plan: "If people call our 800 number a lot, we're in deep yogurt," one executive says frankly.

THE MULTIVENDOR NIGHTMARE

When your problem involves multiple products from more than one vendor, difficulties skyrocket. Is it the software? Is it the hardware? Could the network operating system be the culprit? And who are you going to call?

Several hardware and software companies have established informal relationships with other vendors to keep the user from being bounced back and forth like a Ping-Pong ball. But to date these programs have been little more than ad hoc arrangements, dependent entirely on friendly relations among vendors.

One company that's taken an active role is Hewlett-Packard, whose printer support group has instituted a program called "The Support of Support." Under this program, HP technicians work with technicians from other companies to brief them in advance on new products and get the same kind of service

and assistance in return. "Then, if our line is busy, the user can call WordPerfect or Lotus, whom we've briefed on our products," says Susan Copple, customer support manager for HP's Assist Line for peripheral products.

Dan Lunt, WordPerfect's vice president of marketing, argues that hardware and software companies alike need to be more willing to share information with other vendors as well as with corporate accounts. Such cooperation could eliminate time wasted trying to uncover the solution to a problem that someone else has already identified and corrected.

Novell chairman Ray Noorda recently raised the notion of a "one call solves all" approach. Users, he suggested, would ultimately be able to make a single call to Lotus, Novell, or WordPerfect and get all their technical support-related questions answered. But although this idea has a definite appeal, Lunt isn't convinced that it's practical. "I can't imagine anyone else trying to support WordPerfect and the 700 printers it supports," he says.

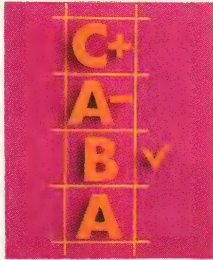
THE DECADE OF SERVICE AND SUPPORT?

It's ironic that the industry's rethinking of technical support comes at the beginning of what's been dubbed the decade of service and support. Companies are realizing that as competition intensifies, they must provide added value to consumers. But it apparently won't come easy for them. Little-used fee-based programs don't meet the needs of the vast majority of customers. On-line services are a nice supplement, but they won't replace telephone support. Even free support isn't enough by itself.

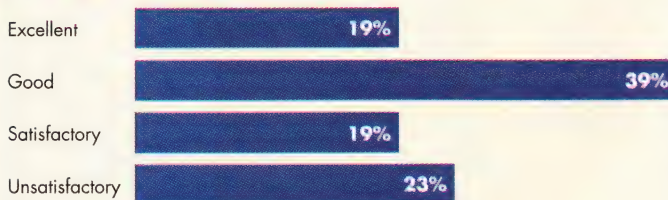
Suppliers must take steps to ensure that users aren't left hanging while problems go unresolved. Increasingly, users will measure vendor performance against that of WordPerfect and other standard setters in customer service, and if their needs aren't met, they'll take their business elsewhere. Rather than waiting for that to happen, vendors

Can You Depend on Your Dealer for Technical Support?

DEALER SUPPORT LEAVES SOME USERS OUT IN THE COLD



The quality of support provided by dealers is inherently unpredictable. Overall, readers surveyed by PC World rated dealer support below manufacturer support.



Source: a survey of 1000 PC World readers.

Hardware companies point to dealers as the primary source of technical support—but what's being done to ensure consistent, high-quality service?

The problem, many users say, is not that the channel is incapable of providing technical support, it's that the quality of support varies from one dealer to the next. The luck of the draw and the size of your account dictate whether you'll get someone who will solve your problems.

Hardware manufacturers say they provide a variety of resources, such as direct hot lines, training, and frequent technical updates, to better equip dealers to meet customer needs. They concede, however, that there's no guarantee of a consistent level of service.

"Service by manufacturers should

always back up resellers," says Jim Schraith, vice president of worldwide service and support for AST Research. "There are always cases where the end user can't get to the reseller."

Over half the respondents to PC World's recent technical support survey use dealers as the primary means of support for their hardware—often because the manufacturer provides no direct support. More telling, however, were comments about the unpredictable nature of dealer support.

Arlene Wacholtz, an assembler for Mercury Marine in Fond du Lac, Wisconsin, was never able to get the assistance she needed for her Compaq 386/20e. "The people I purchased the computer from didn't tell me they'd lost their contract from Compaq," says Wacholtz.

"They were more than glad to sell me the machine, but when it came time for service there was nothing there at all."

But John Pellegrom, the plant floor information system chairman with Ford Motor Company's Sterling, Michigan, plant, says his dealer provides "fantastic support." He's recommended the dealer to other users, who have also been pleased.

In an effort to minimize uncertainty, all the major chains run intensive training and continuing education programs for their retail stores. As with other manufacturer-sponsored programs, however, assessing their effectiveness can be difficult.

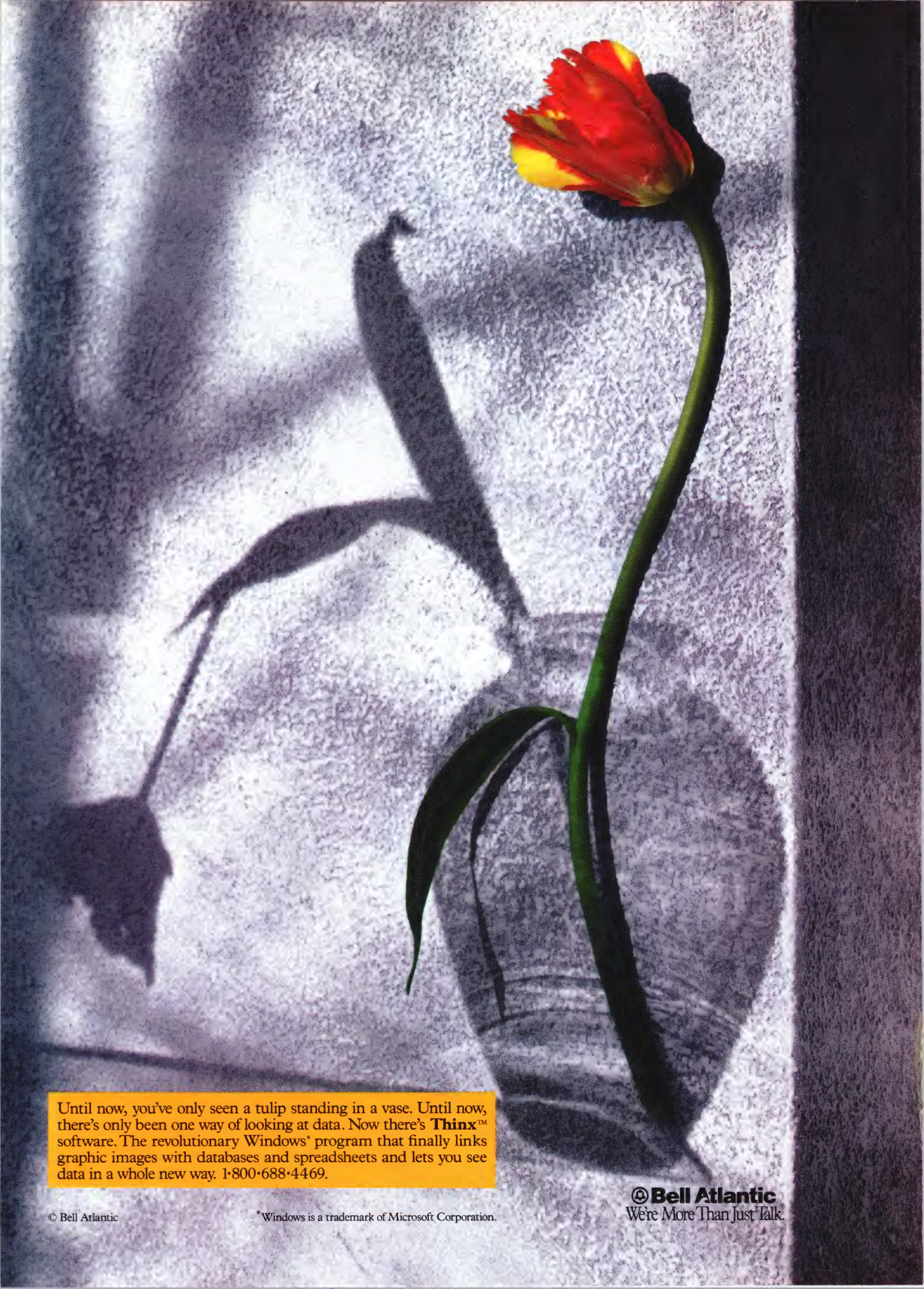
A new Businessland program may eliminate some uncertainty by supplementing local dealer support with customer support from a centralized corporate office. The fee-based Solution Line Plus program provides customers with hardware and software support. If problems can't be resolved over the phone, a service engineer is dispatched to the site. The service assures customers they'll get a consistent level of service, which "most certainly is an issue," says Bob Berry, vice president of service for Businessland.

Some hardware manufacturers back up dealers by providing direct support to end users. NEC Technologies and AST Research, for example, both provide free support (although they advise users to go to their dealers first). "For a lot of reasons, support from the dealer is advantageous," says Ronald Janus, vice president of reseller support for NEC in Boxborough, Massachusetts. "But it doesn't always do the job."—R. F.

must be proactive, letting customers know up front what they can expect in the way of technical support and provid-

ing a suite of services based on long-term customer needs rather than short-term financials. ☐

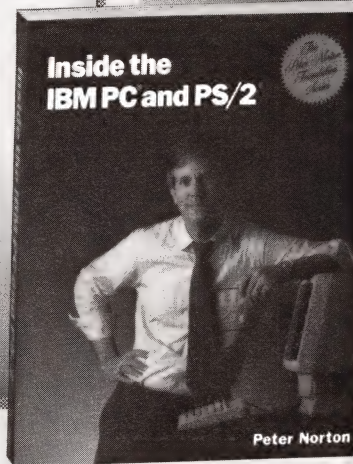
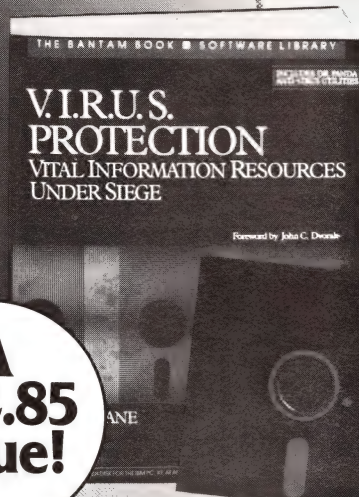
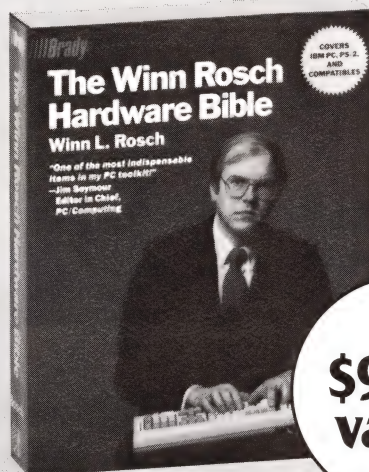
Roberta Furger is an associate editor for PC World.



Until now, you've only seen a tulip standing in a vase. Until now, there's only been one way of looking at data. Now there's **Thinx™** software. The revolutionary Windows® program that finally links graphic images with databases and spreadsheets and lets you see data in a whole new way. 1-800-688-4469.

The 3-Volume IBM USER'S LIBRARY

is yours for only **\$4.95**



**A
\$94.85
value!**

as your introduction to the Small Computer Book Club

You simply agree to buy 3 more books — at significant savings — within the next 12 months

VIRUS Protection with disk

Vital Information Resources Under Siege

By Pamela Kane Foreword By John C. Dvorak

"... probably the most comprehensive [virus protection] package available." — Price Waterhouse, UK

Secure your PC against computer viruses and other coded threats with the very latest information and software. This book/disk set will safeguard your PC with invaluable programs including:

- MONITOR — stops a destructive program dead in its tracks
- TSRMON(itor) — denies access to RAM by unauthorized programs
- PHYSICAL — checks for changes to program files that would indicate destructive code
- NOBRAIN — screens a disk for the (C)BRAIN virus
- LABTEST — checks new programs before they are run
- DRHOOK — maps the use of RAM by active programs

Publisher's Price: \$39.95

Inside the IBM PC and PS/2, 3rd Edition

By Peter Norton

Sharpen your programming skills and understand your computer better with the new edition of Peter Norton's classic on the IBM PC family. Learn how the microprocessors work, operation of the BIOS system, disk drive operation, data storage techniques, how ROM is allocated, and DOS commands and operations for versions 1.1 to 4.0. Practice programming techniques in several different languages, and learn the action of each piece of hardware that makes up the IBM PC. You'll also get insight into program architecture.

Publisher's Price: \$24.95

The Winn Rosch Hardware Bible

By Winn Rosch

"... our pick for the best new microcomputer book of the season... *Hardware Bible* readers will probably know more than most salespeople." *The New York Times*

Learn how to maintain your own hardware. After reading this book, you'll be able to choose, install, maintain, and upgrade PC equipment and accessories yourself. *The Winn Rosch Hardware Bible* covers each hardware element of the IBM PC, PS/2, and compatibles. Includes information on the motherboard, microprocessors, memory, expansion bus, I/O system, parallel and serial ports, printers, the display system, modems, floppy and hard disks, and magnetic and mass storage.

Publisher's Price: \$29.95

THE SMALL COMPUTER BOOK CLUB provides the best books on small computing from a wide variety of publishers, and will keep you up-to-date with books on the latest software releases, programming tools, and much more, all offered to you conveniently and inexpensively.

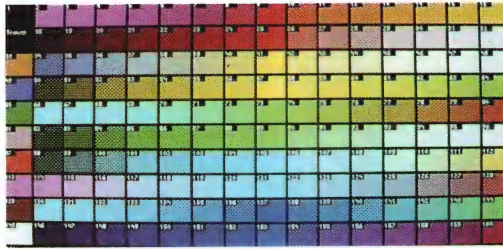
MEMBERSHIP BENEFITS • In addition to getting IBM USER'S LIBRARY for only \$4.95 when you join, you keep saving substantially on the books you buy. • Also, you will immediately become eligible to participate in our Bonus Book Plan, with savings of 60% off the publishers' prices. • At 3-4 week intervals (15 times per year), you will receive the Small Computer Book Club News, describing the coming Main Selection and Alternate Selections, together with a dated reply card. • In addition, up to two times a year, you may receive offers of Special Selections which will be made available to a group of select members. • If you want the Main Selection, do nothing, and it will be sent to you automatically. • If you prefer another selection, or no book at all, simply indicate your choice on the card and return it by the date specified. • You will have at least 10 days to decide. If, because of late mail delivery of the News, you should receive a book you do not want, we guarantee return postage.

If reply card is missing, please write to Small Computer Book Club, Dept. Y-CT6-00069, 3000 Cindel Drive, Delran, NJ 08075, for membership information and an application.

PC World 10/90

Circle 241 on reader service card

A palette of 224
dazzling colors—
more than any
other spreadsheet
—to make your
graphics as
powerful as
your words.

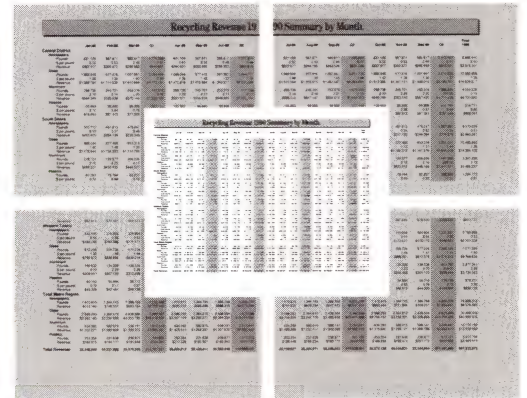


Looks like our PR efforts paid off!

Q4	1989
2,415,407	6,886,910
1,987,897	5,573,029
1,331,601	3,789,665
5,734,905	16,249,604
3,618,229	12,880,958

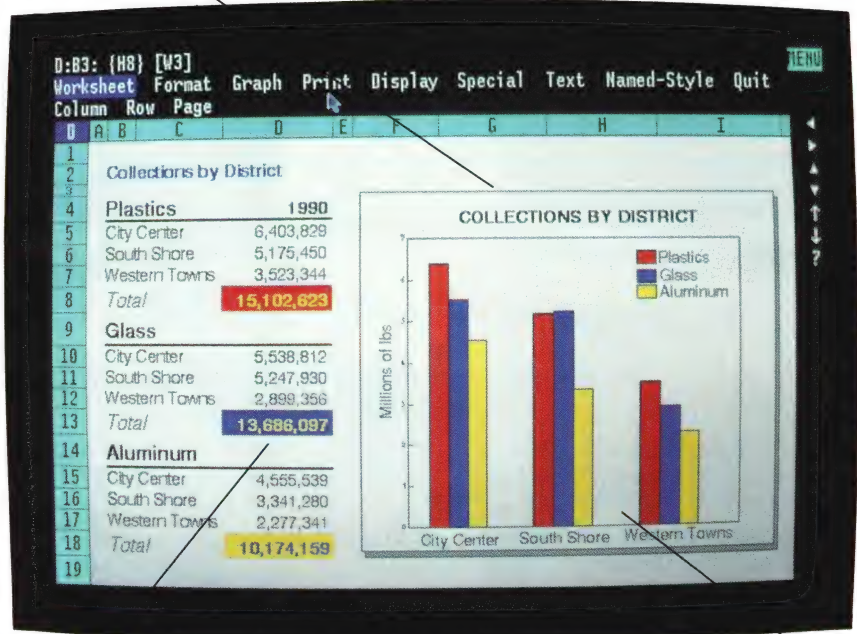
Our Graph Editor lets you add
freehand drawings or symbols to
call attention to critical data.

Create drop shadows,
borders and legends.



Only Release 3.1 offers an auto-compress feature that
quickly reduces larger worksheets so they print on a
single page.

Use a mouse or the keyboard.
It's up to you.



Combine a variety
of colors, type styles
and formats.

The WYSIWYG world of Release 3.1, with
its Impress technology, means what you
see on screen is exactly what you get
when you print your work.

Display "live" graphs
anywhere on the
spreadsheet.

Think Graphically. Think An

Welcome to the world of Lotus 1-2-3
Release 3.1. Where you'll immediately
discover the ease-of-use of a graphical
environment, complete with mouse sup-
port and full WYSIWYG display. In fact,
Release 3.1 gives you so many creative
options, you'll actually find using it fun.

Of course, you'll also find all the
powerful analytical features that have
made Lotus 1-2-3 the best-selling spread-
sheet in the world. Like our unique 3D
technology and access to external
databases.

But it doesn't end there. Because

Release 3.1 also delivers the most
impressive output imaginable. Along
with the widest range of spreadsheet for-
mating options available. Which means
you have complete control over how you
want your work to look.

And even more importantly, we've

WeCycle Waste Corporation

Last year was a good year for the company. WeCycle was profitable and came very close to achieving our goals in a very uncertain economic and recycling climate.

Revenue by Product
Material collections increased over the year. Plastics continue to bring in the most revenue and profit for the company. Prices for aluminum are still very soft and while we're continuing to collect more glass, markets for the raw material are still in their infancy.

Revenue by District
The graph at the right details our revenue by waste material for the four quarters of 1990. The revenue increases show that communities are building their recycling programs beyond just collecting plastics. Revenue from aluminum and glass have increased as their programs have gained volume. But, we're still seeing price pressure as the supply of recyclable materials continues to exceed the demand. We need to look for ways to expand our markets and increase the use of recycled materials.

Executive Summary
Last year was a good year for the company. WeCycle was profitable and came very close to achieving our goals in a very uncertain economic and recycling climate.

Revenue by Product
Material collections increased over the year. Plastics continue to bring in the most revenue and profit for the company. Prices for aluminum are still very soft and while we're continuing to collect more glass, markets for the raw material are still in their infancy.

Revenue by District
The graph at the right details our revenue by waste material for the four quarters of 1990. The revenue increases show that communities are building their recycling programs beyond just collecting plastics. Revenue from aluminum and glass have increased as their programs have gained volume. But, we're still seeing price pressure as the supply of recyclable materials continues to exceed the demand. We need to look for ways to expand our markets and increase the use of recycled materials.

With Release 3.1 your output looks great in black and white.

Choose from 8 combinations of Bitstream® typefaces which you can scale from 3 to 72 points.

Align titles or text – left, right, even or center – with one simple command.

WeCycle Waste Corporation 1990 Recycling Summary

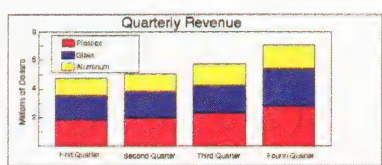
Last year was a good year for the company. WeCycle was profitable and came very close to achieving our goals in a very uncertain economic and recycling climate.

Revenue by Product

Material collections increased over the year. Plastics continue to bring in the most revenue and profit for the company. Prices for aluminum are still very soft and while we're continuing to collect more glass, markets for the raw material are still in their infancy.

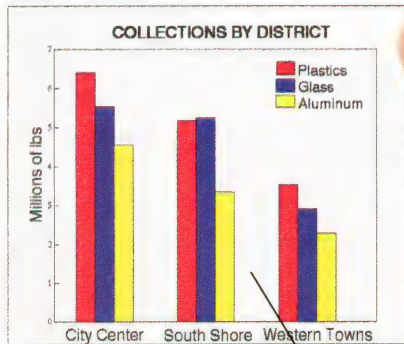
Revenue	Q1	Q2	Q3	Q4	1990
Plastics	1,890,785	1,982,024	2,378,397	2,836,983	9,088,189
Glass	1,700,504	1,862,135	1,869,430	2,600,684	8,032,753
Aluminum	1,146,884	1,182,022	1,489,421	1,601,763	5,420,090
Total	\$4,738,173	\$5,026,180	\$5,737,248	\$7,039,430	\$22,541,032

The graph at the right details our revenue by waste material for the four quarters of 1990. The revenue increases show that communities are building their recycling programs beyond just collecting plastics. Revenue from aluminum and glass have increased as their programs have gained volume. But, we're still seeing price pressure as the supply of recyclable materials continues to exceed the demand. We need to look for ways to expand our markets and increase the use of recycled materials.



Collections by District

Plastics	1990
City Center	6,403,829
South Shore	5,175,450
Western Towns	3,523,344
Total	15,102,623
Glass	
City Center	5,538,812
South Shore	5,247,930
Western Towns	2,899,356
Total	13,686,097
Aluminum	
City Center	4,555,539
South Shore	3,341,280
Western Towns	2,277,341
Total	10,174,159



Mix bold, italics, underlines, colors and typefaces to create over 100 text style combinations – more than any other spreadsheet.

Over 200 graph style combinations that you can size and enhance. You can even display more than one graph per page.

analytically. Think Confidently.

designed Release 3.1 for PCs running either DOS or DOS with Windows™ 3.0. Plus, when you purchase Release 3.1, you

Lotus 1-2-3 3.1



can count on the best and most comprehensive support in the business. Including six months of 24-hour, 7 days a week, toll-free help.*

So don't think twice. Think Lotus.

Call 1-800-TRADE UP, ext. 589 for upgrade information or for a free Release 3.1 demo disk. And be confident that you're buying the best spreadsheet in the world.

Introducing Lotus 1-2-3

3.1

*24-hour support available in U.S. only.

THE BEST OF SHAREWARE 1 9 9 0

To find the very best in try-before-you-buy software, we went to the experts. Here's the cream of the shareware crop, as chosen by the country's top user groups.



ADMIT IT. You get a kick out of trying new programs. Besides, the fun can be productive if you find something worthwhile. The appeal of new software is often dampened, however, by the reality of \$300 or \$400 price tags. And if you get a clunker, you probably can't return it.

There is a more practical, more cost-efficient, and even more enjoyable way to explore and evaluate software—one with an unconditional guarantee. With shareware programs, you can play to your heart's content before making a financial commitment. If you decide to use the program, you're expected to register it and pay the author. Most authors encourage you to

Steve Bass

share copies of their program with friends and co-workers—hence the name *shareware*. Some even offer commissions for copies given away that result in registrations.

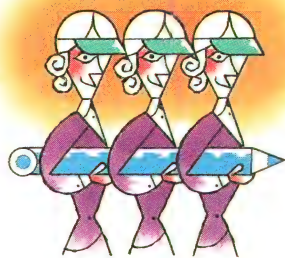
Shareware authors motivate users to register their programs with gentle persuasion, cattle prods, or methods in between. Some open their programs with a simple “guilt screen” that reminds you to clear your conscience by paying up. Others cripple distribution copies of their programs, forcing users to register for a fully functional copy. “One requirement of membership in the Association of Shareware Professionals [an organization of shareware authors] is that software not be crippled,” states spokesman Barry Simon.

Shareware is easy to obtain and inexpensive. It's available through bulletin boards and other on-line services, mail-order houses that specialize in shareware, and user group libraries, or you can get it direct from the authors. “I became aware of almost all of these shareware programs by word of mouth and strong recommendations of satisfied users,” explains Cathy Konas of Chicago's Association of PC Users. “I picked up each and every one electronically via a BBS; whenever possible, I try to get the program directly from the shareware author's BBS or by registration” (see the sidebar “Where Should I Get Shareware?”).

Because of the overwhelming array of shareware and public domain software available—some that surpasses commercial products, some that's best forgotten—*PC World* turned to user groups for help in finding the most worthwhile programs. We asked members to list their favorite shareware programs in nine categories. Responses came from Maine's Is-

land/Reach Computer Users Group, the Boston Computer Society, the New York PC Users Group, the Pasadena IBM Users Group, California's Orange Coast IBM PC User Group, the Sacramento PC Users Group, and Chicago's LAWyers Microcomputer Users Group and Association of PC Users. This straw poll represents the opinions of over 70,000 computer users.

The Buyers' Guide is based solely on user group respon-



ses. This is by no means a complete listing of all available programs but rather a sampling of the most widely used, favored programs. If you don't see *your* favorite, that doesn't mean it's not a great program; it just didn't rate as highly among those who responded.

WHY SHAREWARE?

Price is perhaps the biggest reason people choose shareware. “I would have happily paid \$15 for a commercial product,” states *LIST* user Gene Weisskopf, of the Sacramento PC Users Group, “but nobody could afford to market [a program that cheap]. It had to happen as shareware.” Shareware distribution channels save the author money, especially in lower advertising overhead, and the savings are reflected in reduced cost of the product.

Variety is another reason for shareware's popularity. The large number of shareware developers and the low overhead of their operations result in more creativity. “I

use *4DOS* and *TAPCIS* because neither of them has an equivalent in the commercial world,” explains Esther Schindler of the Island/Reach Computer Users Group.

Astonishingly, our poll indicates many user group members reject mainstream software in favor of shareware. “I find there is very little on the commercial market that can't be found in shareware for a lot less money, and often the shareware programs are as good or better,” says Arthur Torrey from the Boston Computer Society.

Shareware offers other distinct advantages over commercial offerings. When the Pasadena IBM Users Group's John Gray had trouble installing a product, “I called the company, and lo and behold, the author answered the phone. He listened to my suggestions and agreed to make some changes. In a week I had an updated disk!” Other users agree. “Shareware gives the consumer a dramatic increase in power—besides being able to try a program in advance and paying lower prices than for commercial software, I have access to the author, who will take my ‘wish list’ of features seriously,” adds Steve Howell, also of PIBMUG.

For Jay Engel, another member of PIBMUG, shareware versatility and cost are most important. “*PC-File* serves my needs—it's simple yet complex, quick, and very flexible.” Ditto for Frank Bolton, New York PC: “With *PC-File*, I don't need any more power than what the program provides, and I've saved myself from a much steeper learning curve.”

Some kinds of software, such as disk optimization and caching programs, are potentially too dangerous to be left in the hands of anyone but commercial publishers. “Defragmenting a hard disk is

something I'd rather leave to a commercial product,” says Marv Horner of PIBMUG. “I'm reluctant to try something so touchy using [shareware].” Other kinds of utilities, such as file managers and batch file enhancers, however, are well represented with high-quality shareware. In major applications like word processors, spreadsheets, and data base managers, shareware is also a reasonable alternative. *Microsoft Windows* shareware is popular as well (see “Buyers' Guide: Shareware for Windows,” February 1990). In the areas of communications and archiving, shareware offers not only quality programs but major market leaders.

The listings that follow include the programs' file names in parentheses to help you find them on line. Whether your purchasing is constrained by a household budget or a corporate one, buying shareware can get you quality programs at a reasonable cost. ●

Steve Bass is the president of the Pasadena IBM Users Group, on the executive board of the Association of Personal Computer User Groups (APCUG), and a licensed family therapist.

ARCHIVING UTILITIES

PKZIP and PKUNZIP 1.10

(PKZ110.EXE)

One of the most popular shareware programs of all time, Phil Katz's *PKZIP* and *PKUNZIP* is the standard for compressing and uncompressing files. Included is a tool for creating executable archived files that self-extract. PKWare, Inc., 7545 N. Port Washington Rd. #205, Glendale, WI 53217; 414/352-3670, 414/352-3815 (fax). \$25 fee, \$47 with printed manual.

Reader service no. 615

Shez 5.5

(SHEZ55.ZIP)

Shez is a universal archiving utility that supports ZIP, ARC, PAK, and other popular archive file formats. Features include unarchiving, browsing, converting from one format to another, and scanning archived programs for viruses. California Software Design, P.O. Box 15248, Santa Rosa, CA 95402. \$25 fee.

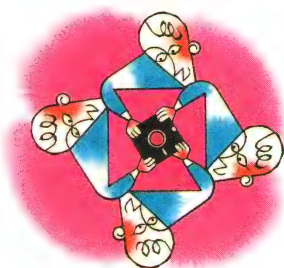
Reader service no. 616

BUSINESS

Contact Plus 2.12

(CPLUS212.ZIP)

Contact Plus is a tracking system for sales, customers, and clients that outputs data in *WordPerfect 5.0* format. Other features include an auto-dia-



ler, a phone-call log, ticklers, mailing list management with soundex search capability, and a calendar. A LAN version is also available. Trujillo Software, P.O. Box 3992, Albuquerque, NM 87190; 505/881-3223, 505/881-7781 (BBS). \$79 fee.

Reader service no. 617

Finance Manager II 1.3

(FMGL.ARC, FMGL-2.ARC, FMAP-2.ARC, FMAR.ARC, FMAR-2.ARC, FMPR.ARC, FMPR-2.ARC)

These six double-entry accounting program modules work together or separately. Each is menu-driven, handles 2000 accounts, manages multiple sets of books, and analyzes data with graphs and reports. The modules: general ledger, accounts payable, accounts receivable, payroll, account rec-

onciliation, and financial utility. Hooper Int'l, Inc., P.O. Box 50200, Colorado Springs, CO 80949; 800/245-7789, 719/528-8997 (fax). \$14.95 to \$49.95 depending on module; \$219 for all modules.

Reader service no. 618

Pony Express 1.104

(PONYEX.ZIP)

Pony Express compares cost and delivery time between United Parcel Service and the U.S. Mail, including options for overnight and next-day delivery, insurance, and other variables. A comprehensive tutorial is included on disk. Melisco Marketing, Inc., 9719 Ensley Ln., Leawood, KS 66206; 800/642-5045, 913/642-5466 (fax). \$50 fee, \$80 with printed manual.

Reader service no. 619

For more information about all products in this section, circle reader service no. 907.

COMMUNICATIONS

Procomm 2.4.3

(PROCOMM.ARC)

This is the telecommunications program mentioned most often in the user group community. "*Procomm* is very easy to use and learn, it's full featured, and it overpowers all commercial products," claims Paul Bernstein of the LAWYERS Microcomputer Users Group. The program contains a centralized dialing directory, a powerful script language, keyboard macros, and a large set of protocols and runs via mnemonic <Alt>-key combinations. Datastorm Technologies, P.O. Box 1471, Columbia, MO 65205; 314/443-3282, 314/875-0595 (fax). \$35 fee, \$50 with bound manual.

Reader service no. 620

Qmodem 4.2

(QM42SST.ZIP)

This telecommunications pro-

gram has a reputation for ease of use, thanks to a quick learn mode for novices and context-sensitive help. Other features include redialing, batch uploads, internal protocols including ZMODEM, easy configuration, and quick modem definition setup. Forbin Project, Box 702, Cedar Falls, IA 50613; 319/232-4516, 319/233-1725 (fax). \$30 fee, \$49.95 with disks, \$79.95 with disks and bound manual.

Reader service no. 621

TAPCIS (The Access Program for CompuServe Information Service)

5.2B

(TAP.ZIP)

Intended strictly for use with CompuServe, *TAPCIS* reduces costs by automating online tasks. While off line, you tell *TAPCIS* which forums to check, messages to send, and files to download; it handles the work on its own. Most polled users were ecstatic about both the time and the money they saved. The Support Group, P.O. Box 130, McHenry, MD 21541; 800/872-4768, 301/387-7322 (fax). \$79 fee.

Reader service no. 622

For more information about all products in this section, circle reader service no. 902.

DATA MANAGEMENT

File Express 4.32

(FE1.ZIP, FE2.ZIP)

This menu-driven, flat-file data base (a relational version is expected soon) is intended for novices and intermediate users. Features include undelete, printer controls, and the abilities to delete duplicate records, search on multiple fields, and read and write DBF files. You also get an easy-to-use yet versatile report generator. Expressware, P.O. Box 1800, Duvall, WA 98019; 800/753-3453, 206/788-

4493, 206/788-4008 (BBS). \$99 fee.

Reader service no. 623

PC-File 5.0

(PCF.ZIP)

An overwhelmingly large number of votes made *PC-File* one of the poll's top winners. It's menu-driven, it reads and writes DBF files, and it has context-sensitive help screens and a duplicate-record search capability. "It does everything the major products do—for less money," proclaims Jay Engel, PIBMUG constituent. ButtonWare, P.O. Box 96058, Bellevue, WA 98009; 800/528-8866 (orders only), 206/454-0479, 206/454-1838 (fax). \$129.95 fee.

Reader service no. 624

DESKTOP ORGANIZERS

HomeBase 2.53

(HB215D1.EXE, HB215D2.EXE, HB215D3.EXE)

This RAM-resident smorgasbord includes a word processor, a telecommunications module, an auto-dialer, a calendar, a calculator, a data base, and a DOS shell. The large RAM overhead—80K to 213K, depending on the features used—cannot be shifted to expanded memory. Brown Bag Software, 2155 S. Bascom Ave., Campbell, CA 95008; 800/525-0764, 408/559-4545, 408/559-7090 (fax). \$49.95 fee.

Reader service no. 625

Power Desk 1.26sw

(POWERDESK.ARC)

Like *HomeBase*, *Power Desk* is a grab bag, though not a RAM-resident one. There's a data base, an auto-dialer, phone directories, custom reports, label and envelope generators, an alarm, a calendar, and to-do and done lists. You also get a word processor with mail merge and a spelling checker. Wade B. Dowdle, 8516 Sugarbush, Annandale, VA

WHERE SHOULD I GET SHAREWARE?

How you obtain shareware depends on personal preference and work habits. If you enjoy on-line action, you may choose to download programs from a BBS. If you belong to a user group, that may be your best source. To be certain you're looking at the latest version, order the program direct from the author. Most of these methods involve some nominal charge.

Whatever the source, check to see if the developer belongs to the Association of Shareware Professionals. To join the ASP, a shareware author must agree to support his or her products, offer clear registration policies, and distribute the program in its complete, rather than a crippled, form. The association also provides an ombudsman to mediate between shareware authors and users. You can get good shareware from non-members, but a developer's ASP membership assures you a minimum level of support.

Whether shareware users are more likely to be hit with viruses than those who stick to commercial products is a matter of debate. According to Paul Mayer of ASP, "there's no record of a virus spreading via shareware." Nevertheless, it stands to reason that a program given to you by a friend or uploaded to a BBS by a stranger is more likely to be contaminated than one coming directly from the author.

Here's a guide to obtaining shareware.

Direct From Author

When you get shareware from the author, you're guaranteed the most current, virus-free version. Many shareware authors have their own electronic bulletin boards and accept payments via charge cards.

Mail-Order Sources

PC-SIG, Public Brand Software, and the Public Software Library are the major shareware mail-order houses, selling unregistered programs by the disk. To stay competitive, these companies keep their libraries stocked with the most current programs, fresh from the author, and distribute listings in catalog and/or magazine form. Disks sell for between \$3 and \$6, and the programs on them are usually archived (compressed), so that you get plenty of software for your money.

Electronic Bulletin Boards (BBS's)

For impatient users, bulletin boards give quick access to shareware. Private, long-standing BBS's usually check new programs for viruses before they make them available, but smaller, less established boards can't always afford to do this. Major boards, such as CompuServe and GEnie, charge hourly for access time and have large software collections as well as messaging and forum cen-

ters. Smaller boards vary in their services. Exec-PC, for example, which has over 40,000 downloadable files, charges a flat yearly fee of \$60, and there are no on-line charges. Major metropolitan areas have small, local bulletin boards where programs can be obtained for the price of a phone call.

User Group Libraries

User groups can be a rich and exciting source of shareware, provided there's a dedicated librarian maintaining the disks. Larger clubs get ongoing shareware updates directly from authors, while others maintain a relationship with mail-order houses for their supply. Access to the library ranges from distribution at monthly meetings to members-only BBS's. Virus potential is low.

To find out about user groups in your area, see our annual listing (*Consumer Watch*, August 1990) or contact the Association of Personal Computer User Groups.

From Friends

The cheapest but most dangerous way to get shareware is from a friend. Not only are you likely to get an out-of-date version, but your chances of virus infections are significantly increased. To make sure your system stays as clean as the proverbial whistle, take your friends' recommendations, but don't take their disks. —S. B.

WHERE TO BUY

Association of Personal Computer User Groups
1101 Connecticut Ave.
NW #901
Washington, DC
20036

Association of Shareware Professionals

P.O. Box 5786
Bellevue, WA 98006
CompuServe: GO
SHARE

CompuServe Information Service, Inc.
P.O. Box 20212
5000 Arlington Centre
Bldv.

Columbus, OH 43220
800/848-8199
Reader service no. 645

GEnie
General Electric Information Service
401 N. Washington St.
Rockville, MD 20850
800/638-9636
Reader service no. 646

PC-SIG
1030 E. Duane Ave.,
Ste. D
Sunnyvale, CA 94086
800/245-6717
Reader service no. 647

Public Brand Software
Box 51315
Indianapolis, IN 46251

800/426-3475
Reader service no. 648

Public Software Library
P.O. Box 35705
Houston, TX 77235
800/242-4775
(orders only),
713/524-6394
Reader service no. 649

22003; 703/978-2339. \$49 fee.

Reader service no. 626

DOS SHELLS AND FILE MANAGEMENT

Automenu 4.7

(AUTO47.EXE)

Automenu helps you set up customized menus that not only insulate your users from DOS but protect DOS from your users. One of the most popular programs in this poll, *Automenu* has multiple password protection, mouse support, and screen blanking, and it can execute programs, batch files, and DOS commands.

Magee Enterprises, Inc., P.O. Box 1587, Norcross, GA 30091; 404/446-6611, 404/368-0719 (fax). \$69.95 fee.

Reader service no. 627

DoubleDir 2.5

(DD25.ZIP)

This file manager lists two directories on screen side by side, shows attributes, and compares files both by exact match and by date and size. For programmers, *DoubleDir* also does hex dumps and character string searches. Eric Grunin, 250 W. 100th St., New York, NY 10025; 212/864-6648. \$20 fee.

Reader service no. 628

LIST 7.3d

(LIST73D.ZIP)

LIST shows you the contents of your text files in a scrollable, full-screen display. Features include hex viewing, split screens, text search, and sequential viewing of multiple files via wild cards. Gene Weisskopf of the Sacramento PC Users Group uses *LIST* "all the time, because it loads in a split second, has search capabilities, and is very reliable." Vernon D. Buerg, 139 White Oak Cir., Petaluma, CA 94952; 707/778-8944, 707/778-8841 (BBS's). \$20 fee.

Reader service no. 629

WYND-DOS 2.0

(WS.EXE)

WYND-DOS places two windows on screen, one containing a directory tree and the other listing files in the current directory. From the menus you can copy, delete, move, print, browse, and rename files. Features include program and DOS execution, file matching, and mouse sup-



port. Wyndware, One Parker Pl. #308, Janesville, WI 53545; 800/475-1628. \$30 fee.

Reader service no. 630

For more information about all products in this section, circle reader service no. 903.

DOS UTILITIES

CED (Command Editor) 1.0D

(CED.ARC)

CED holds the last 20 (or more) DOS commands issued in a buffer for editing and reuse. It also lets you represent a command sequence with a single word or even a single letter. Cove Software offers *CED* free in the public domain in the hope you'll upgrade to *PCED*, a more comprehensive commercial product costing \$53.

The Cove Software Group, P.O. Box 1072, Columbia, MD 21044; 301/992-9371. No fee.

Reader service no. 631

Fansi-Console 2.00U

(FCON200.ARC or FCON200.ZIP)

This bundle of fast and powerful screen and keyboard enhancements completely re-

places DOS's ANSI.SYS. Among its more than 100 features are much faster screen display, backward scrolling, macros, screen snapshots, increased key repeat rate, and a screen blanker. Hersey Micro Consulting, Inc., P.O. Box 8276, Ann Arbor, MI 48107; 313/994-3259. \$49.95 fee, \$75 with manual, \$119.95 with technical manual.

Reader service no. 632

4DOS 3.02

(4DOS302.ZIP)

4DOS takes the place of COMMAND.COM, offering over 30 additional commands and taking up only 2K of conventional RAM on systems with expanded memory. Features include long file names, added wild-card capabilities, multiple commands per line, and an enhanced DIR. J.P. Software, P.O. Box 1470, East Arlington, MA 02174; 617/646-3975, 617/646-0904 (fax). \$35 fee, \$50 with manual.

Reader service no. 633

Mark and Release 2.9

(TSRCOM.ARC)

With this collection of utilities you can load and remove RAM-resident programs at will, as well as see what you currently have in memory. "It's a practical means of managing memory—much more so than any commercial product I've seen," says Paul Curtis, of the Orange Coast IBM PC User Group. Turbo Power Software, P.O. Box 66747, Scotts Valley, CA 95067; 408/438-8608. \$20 fee.

Reader service no. 634

Newkey 5.2

(NEWKEY.ARC)

Many users prefer *Newkey* to their applications' built-in macro features. This general-purpose macro processor records keystrokes and plays them back later via <Ctrl>-, <Alt>-, or <Shift>-key combinations; captures text from

screens; enlarges the DOS keyboard buffer; and can pause for user input. FAB Software, P.O. Box 336, Wayland, MA 01778; 508/358-6357. \$43 fee.

Reader service no. 635

Patriquin's Utilities PCopy 8.5B, PSearch 4.3, PPrint 4.0B, PDelete 3.3C, PAttribute 1.0, PALert 1.6, PTouch 2.0, Pre-Back 1.3

(PCOPY85B.ZIP, PS43.ZIP, PPRINT4B.ZIP, PDEL33C.ZIP, PATR.ZIP, PALERT16.ZIP, PTOUCH.ZIP, PREBAK13.ZIP)

These utilities replace a number of common DOS commands. Programs include a file copier that warns you before overwriting a file, an alarm that alerts you when you're low on disk space, and an inexpensive file- and text-search program. Although the programs are distributed separately, the single \$45 registration fee buys you the entire collection. Patri-Soft, P.O. Box 8263, San Bernardino, CA 92412; 714/422-3727. \$45 fee.

Reader service no. 636

StackKey and BatUtil 3.0

(STACKKEY.ZIP, BATUTIL.ZIP)

StackKey plays back a key-stroke combination when you load the program, effectively giving you a start-up macro for every application. *BatUtil* enhances the DOS batch language with such features as sophisticated menuing, file date comparison, an enhanced ANSI.SYS, and interactive editing of the PATH statement variable in memory. Although the programs are distributed separately, the single \$39 registration fee buys you both. The Support Group. \$39 fee.

Reader service no. 641

For more information about all products in this section, circle reader service no. 904.

SHAREWARE MEETS CORPORATE AMERICA

Corporate America tends to be suspicious of anything that isn't sold in a retail store—sometimes with good reason. MIS managers worry about bug-laden software, late updates, inadequate technical support, nonexistent site licensing, and vendors' going out of business. Consequently, shareware isn't popular with this large market for computer products.

Volume purchasers are always on the lookout for viruses infiltrating their company computers, and they're especially wary of shareware. *Flu-Shot+* author Ross Greenberg contends that "more data has been lost by spilled cups of coffee than by any virus attack," but for MIS managers, being overly suspicious—even paranoid—about incoming software is natural. Experience shows, however, that shareware isn't

likely to be contaminated, and acquiring it from the author is as safe as buying shrink-wrapped commercial programs.

Slowly but surely, some Fortune 500 companies are beginning to whistle a different tune. There are a number of reasons for this, ranging from low prices to the incentives offered by companies selling shareware. Judith Schuman, of St. Joseph Flow Cytometry Laboratory in Burbank, California, has "no reservations when it comes to shareware. It is a good alternative to our traditional sources of software—and price has a lot to do with it."

Shareware companies are duplicating commercial vendors' most positive attributes: site licensing, product stability, solid technical support, and worthwhile upgrades. Smart corporate software buyers are realizing that

shareware authors are often willing to pay more attention to their needs, without the rigid policies of large, commercial vendors. At least two shareware products, Datastorm Technologies' *Procomm* and Magee Enterprises' *Automenu*, have succeeded in becoming industry standards, even in the shareware-suspicious corporate environment.

Of course, prejudice persists. A network operations manager reported, for example, that his company, a large semiconductor manufacturer, was replacing its existing menuing system. When asked if shareware had been evaluated, he explained that it had not been an option. The menu program they chose was Magee's *Automenu*, which he hadn't realized was shareware. —S. B.

SPREADSHEETS

As-Easy-As 4.00

(ASEASY40.ZIP)

This 1-2-3-compatible spreadsheet packs a lot into an inexpensive product. Features include a partially 1-2-3-compatible macro language, column/row interpolation, goal seeking, pulldown or 1-2-3-style menus, spreadsheet linking, graphs, and laser printer support. Trius, 231 Sutton St., #2D-3, North Andover, MA 01845; 508/794-9377, 508/688-6312 (fax). \$50 fee. Reader service no. 642

PC-Calc+ 2.0

(PCCPA.ZIP, PCCPB.ZIP, PCCPC.ZIP)

PC-Calc+ imports data from WK1, DBF, and other popular formats. It has extensive on-line help; full math, statistical, financial, and time functions; graph and chart generation;

and sideways printing on dot matrix printers. ButtonWare, \$69.95 fee.

Reader service no. 643



WORD PROCESSORS, OUTLINERS, AND TEXT EDITORS

PC-Type II 1.0

(PCT.ZIP)

This full-featured word processor has split screens, full laser support, line and box drawing, macros, on-line help, a built-in spelling checker, and other features found in commercial word processors. ButtonWare, \$89.95 fee. Reader service no. 637

PC Outline 3.34

(PCO334.EXE)

Usable as either a stand-alone or an 80K-plus RAM-resident program, *PC Outline* offers up to 46 collapsible outline levels to help you systemize, rearrange, and categorize items, thoughts, and ideas. It imports and exports ASCII and *Word-Star* files. Brown Bag Software, \$89.95 fee.

Reader service no. 638

PC-Write 3.03

(PCW303.EXE)

"*PC-Write's* frequent updates and powerful features make it a major contender in the word processing wars," says Patti Balke of the Pasadena IBM Users Group. One of the oldest and most popular shareware products, this word processor offers mouse support, multi-column editing, a split screen for editing multiple files, network file locking, keyboard

macros, a 50,000-word spelling checker, and other features. Quicksoft, 219 First Ave. N #224, Seattle, WA 98109; 800/888-8088, 206/286-8802 (fax). \$19 fee, \$129 with manual and technical support. Reader service no. 639

QEdit Advanced 2.1

(QEDIT21.ARC)

This programmer's text editor supports extended and expanded memory and multiple windowing. Up to 99 files can be open for editing. The *Word-Star*-like interface can be remapped to emulate other word processors. SemWare, 4343 Shallowford Rd., #C-3, Marietta, GA 30062; 404/641-9002, 404/640-6213. \$54.95. Reader service no. 640

For more information about all products in this section, circle reader service no. 905. ☺

Don't look now, but moving on

Suddenly, IBM Personal System/2[®]s with Micro Channel[™] on desks everywhere are exhibiting some pretty wild and wonderful tendencies. They're creating incredible on-screen presentations. Interactive tutorials with full-motion video and stereo sound. Graphics, text and animation in harmonious coexistence. What makes it all possible is the multimedia capability of the IBM PS/2[®] with Micro Channel.

MICRO CHANNEL MAKES IT LOOK EASY.

The PS/2 itself is designed to put multimedia applications to their best use. Micro Channel has always given the PS/2 extremely fast data rates and better multitasking capabilities. But in multimedia applications, it really gets a chance to shine. The multilane highway design of Micro Channel Architecture is perfect for processing complex multimedia applications. Most conventional PCs just don't have the power or the data paths to do it at all. Plus, Micro Channel in the PS/2 lets you use

the new IBM CD-ROM that gives you the storage equivalent of over 400 diskettes on

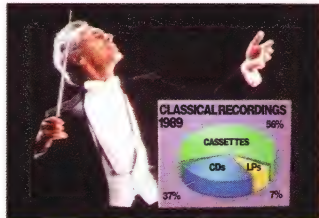


there's something your desk.

a single CD, so you can have access to all kinds of data-intensive material like clip art and digital stereo sound.

DO IT ALL. ALL AT ONCE.

With a PS/2 with Micro Channel, you can start using some hot products right now. One is IBM's Audio Visual Connection™. It's both a software and a hardware tool that allows your PS/2 to import high-quality audio, dazzling still images, even special effects, as well as text, graphics and other data. Then, you can edit and present it in any combination you like right on your PS/2 screen, share it with a network or project it on a wall. It's impressive, but don't take our word for it—IBM's Audio Visual Connection received *PC Magazine's* Technical Excellence Award for 1989.



Another exciting multimedia product is the IBM M-Motion Video Adapter/A™. Coupled with the power of Micro Channel, it lets you incorporate full-motion video and high-quality sound from sources like video disks, VCRs and video cameras, digitize them, and display them in an endless array of formats.

And for software developers, there are ActionMedia™ cards, a collaborative effort between IBM and Intel.

ActionMedia cards use the latest DVI™ (Digital Video Interactive) technology, which allows full-motion video and analog

sound to be compressed, digitized, stored on a hard or optical disk and played back in real time, with incredibly sharp resolution.



YOU'VE ALREADY GOT THE BEST SEAT IN THE HOUSE.

Best of all, you can do it all today with the Micro Channel PS/2s you've already got. No special monitors to buy. And you'll be perfectly poised for tomorrow's most exciting multimedia technology, like interactive touch displays and much more.

Contact your IBM Authorized Dealer or IBM marketing representative. For a free demonstration videocassette or a dealer near you, call 1 800 255-0426, ext. 26.

Your desk will never be the same.

For a free PS/2 MultiMedia demonstration videocassette call 1 800 255-0426, ext. 26 or send this completed coupon to: IBM Corporation
P.O. Box 92835, Rochester, NY 14692

Name _____

Title _____ Phone _____

Company _____

Address _____

City _____ State _____ Zip _____

☐ If you are a software developer, check here.



How're you
going to do it?
PS/2 it!



IBM, Personal System/2 and PS/2 are registered trademarks and Micro Channel, Audio Visual Connection and M-Motion Video Adapter/A are trademarks of International Business Machines Corporation. DVI and ActionMedia are trademarks of Intel Corp. © 1990 IBM Corp.

Circle 108 on reader service card

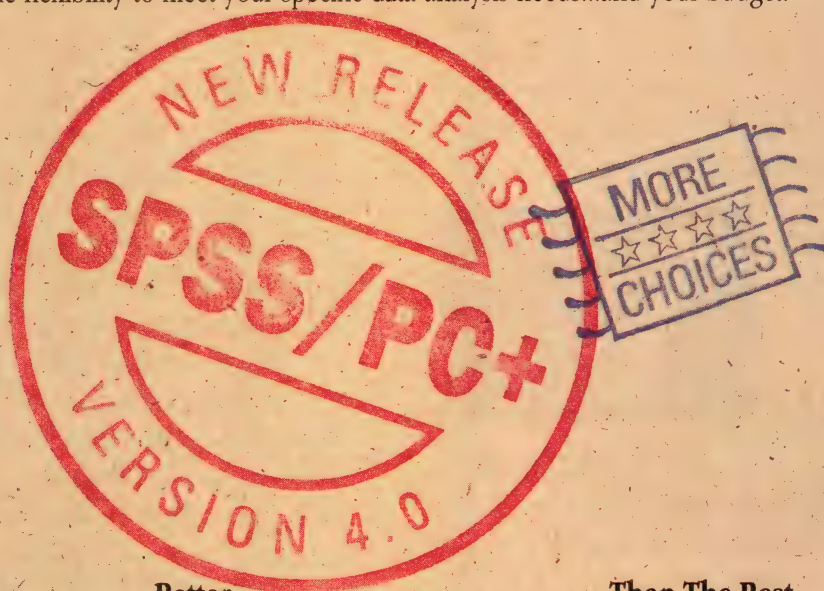
A Welcome Edition.

The most popular PC data analysis package is now even better.

Now when you choose SPSS/PC+™ 4.0, not only do you get the best-selling statistical data analysis software, you get a choice. A choice of the options you need. A choice of the options you want.

Powerful options for data entry, advanced statistics, forecasting, mapping, graphics and more.

Options to help you turn data into information. The newest edition of SPSS/PC+ has the flexibility to meet your specific data analysis needs...and your budget.



SPSS/PC+ 4.0 is...

SPSS/PC+ 4.0 is a fully integrated, sophisticated group of software products designed to handle all your data analysis needs.

SPSS/PC+ allows you to organize, analyze, forecast and display data in countless ways, making it easier to identify patterns and trends that might otherwise go unnoticed. With SPSS/PC+, you gain added insight into the relationships and meaning of your data. And with its graphics and mapping options, SPSS/PC+ provides for a convincing presentation of your conclusions.

Better...

Along with a choice of options, the new SPSS/PC+ 4.0 offers you something more. Like SURVIVAL for life table analysis, PROBIT for expected dosage modeling, and X11ARIMA for smoothed, seasonally adjusted forecasting. And improvements to procedures like REGRESSION and CROSSTABS. Plus, we've updated our Novell® and 3Com® network support and added Banyan VINES.™ SPSS/PC+ 4.0 also supports the latest versions of dBASE®, Excel™ and Lotus®, and by adding Graph-in-the-Box Executive™ and MapInfo™ to our support for Harvard® Graphics and Graph-in-the-Box®, we've created more presentation options than ever before.

Than The Rest.

Whether you only choose the options you need, or choose the options you've always wanted, with the latest edition of SPSS/PC+, you've chosen the best. And if you're in need of a comprehensive package, we offer the widest range of options. Of course, SPSS/PC+ still features a menuing and help system, as well as an on-line statistical glossary to help you interpret results as you go. And you'll always have the training and support you can expect from SPSS, suppliers of statistical software to over 2 million users worldwide.

For more information on SPSS/PC+ call 312-329-3318.

SPSS

Painless Programming With BASICA

If you own a system, you probably have a copy of BASICA already. Why not use it to build this slick DOS menu system?

Marty Franz

INSIDE HOW TO

241 **Word Processing** **Words Into Print**

Improve your word power with customized *WordPerfect* dictionaries.

247 **Spreadsheets** **Spreadsheets (A..Z)**

Understanding criteria lets you get the most from 1-2-3 data bases.

253 **Data Management** **Data Basics**

dBASE indexes are the key to lightning-fast search and retrieval.

259 **Publishing & Graphics** **The Art of Persuasion**

Say it with type! How to put the best face on your important documents.

265 **Communications** **The Information Edge**

NewsNet offers on-line access to an enormous base of high-tech news.

271 **User Group Tips**

- A TYPE command with MORE
- Easy *Word* columns
- Fixing the holes in *Paradox* tables



Programming

If you're like most users, you've probably examined the BASICA booklet that came with your PC about as thoroughly as you studied the Styrofoam packing material. But it doesn't have to be that way. While no longer the choice of professional programmers, BASICA is quite handy in situations where DOS batch files can't quite do the job. Situations where BASICA is useful range from reading disk directories to setting printer control codes.

This article shows how to create a menu in BASICA for calling other pro-

grams and frequently used DOS commands (see **LISTING 1**). You can customize this program for your own applications and utilities with a few simple changes or use the same principles to write other types of programs.

Getting BASICA Going

The nice thing about BASICA is that you probably already own it. If you can't find your BASICA manual or program, it may be under a different name. Depending on your version of DOS, you may have BASIC, BASICA, or GWBASIC. Functionally, they're all pretty similar. BASICA stands for BASIC Advanced, while GWBASIC stands for—believe it or not—Gee Whiz BASIC. The BASICA that comes with IBM DOS is machine specific and works only with IBM computers, but the other BASICS aren't so picky.

To use MENU.BAS, first be sure your version of BASICA is in a directory listed in your path statement (the file is usually in the DOS directory). Next,

The Ultimate

TYPIST

What if you could have an electronic assistant, capable of typing 500 words per minute, while sitting quietly at your side, and taking up no more space than a telephone?

Sound like a great idea?

That idea is now reality with the *Typist*™ from Caere.® Designed to be the ultimate typing machine, the *Typist* is capable of reading any text, no matter what style font, font size or column format, and entering it directly into your Macintosh® or PC compatible word processor, spreadsheet or

database – without interruption. Caere, the company that pioneered Page Recognition with *OmniPage*® has now developed the world's most personal scanner.

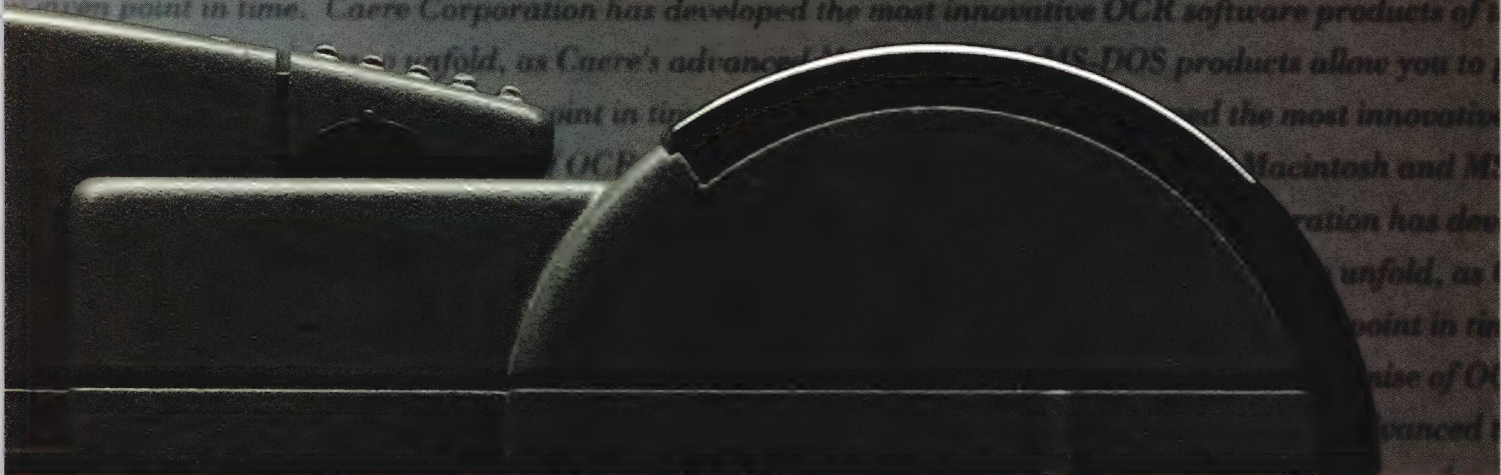
The *Typist* works like your own personal assistant, capable of typing 500 words per minute – as well as numbers – entering it directly into your software application just like a keyboard – only faster.

The *Typist* is more than a typical hand scanner, generally suited to scan graphic images, but limited when it comes to text. As the world's most personal scanner, the *Typist* is a sleek, ergonomically



The Typist lets you accurately insert text or numbers directly into a PC compatible or Macintosh word processor, spreadsheet or database – simulating keystrokes effortlessly.

Typing Machine.™



designed peripheral that requires no special training or expertise. Select text or columns of numbers from any document, and the *Typist* enters your selection directly into your word processor or spreadsheet in whatever format you happen to be using – fully simulating your keyboard in every way. Scan up to 2 column inches per second, and the *Typist* will stay fully aligned – even when you scan rows and columns *sideways*.

Think of the possibilities.

Use the *Typist* as your very own *personal* assistant. Enter rows and columns of numbers from business journals or periodicals, directly into your most critical documents,

including spreadsheets. Develop business reports, presentations, legal contracts, or desktop published documents in a fraction of the time. Further enhance your reports and presentations by incorporating graphics or photo images – the *Typist* makes it easy – improving your productivity whatever the assignment.

To learn more about the *Typist* and how it can be of assistance to you, contact one of Caere's participating dealers. Caere, the Complete Recognition Company.



For more information:

Call: 1-800-535-SCAN

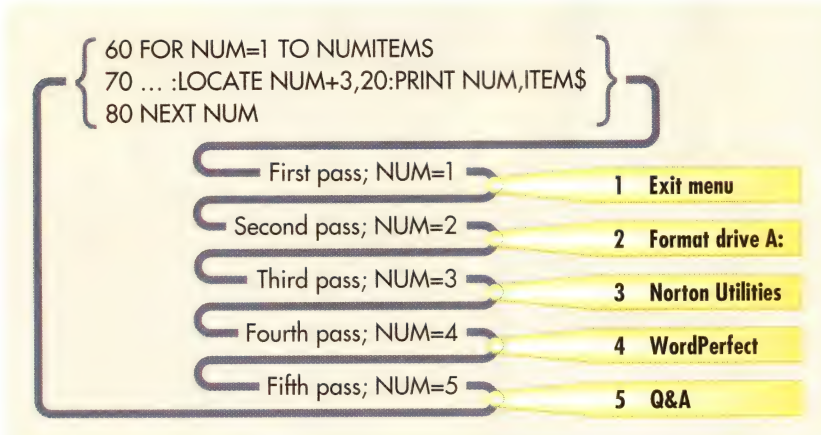
**Write: Caere Corporation
100 Cooper Court
Los Gatos, CA 95030**



Caere, OmniPage and the Caere logo are registered trademarks of Caere Corporation. Typist, AnyFont technology and The Ultimate Typing Machine are trademarks of Caere Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Printed in the USA. All rights reserved. ©1990 Caere Corporation.

Circle 21 on reader service card

Inside a BASICA Menu



Menu options are displayed using a FOR...NEXT loop. The value of NUM, which increases with each pass, controls both the option number and the line on which the option appears.

using a text editor, enter **LISTING 1** into an ASCII file called MENU.BAS, changing the prompts and programs in lines 210 through 240 to match your own applications and utilities. You can run the program by typing **basica menu** at the DOS prompt in the directory that contains MENU.BAS.

Making the Menu

Unlike lines in a DOS batch file, every line in a BASICA program starts with a line number. You could number the lines 1, 2, 3, and so on, but if you later add a line between 2 and 3, you'll have to re-type a lot of numbers. To allow for such additions, number your lines 10, 20, 30, and so on. You can also include more than one statement on a line by separating them with colons (:). Statements starting with REM are remarks for annotating the program.

The heart of MENU.BAS is the group of DATA statements in lines 180 through 240. Line 180 states the number of items in the menu, and line 190 gives the menu's title. Following that is a list of options grouped as pairs of strings, each enclosed by quotes. The first string is the option's screen prompt; the second is the DOS command that runs when the option is chosen. If your version uses more or fewer options than the sample here, change the number in line 180 appropriately.

Clearing the Deck

When the program is first run, line 40 turns off the BASICA function key menu and clears the screen. Line 50 contains three statements that prepare the text to be shown on screen, and display the menu title. The RESTORE statement resets BASICA's data pointer to line 180 so that the following READ will put the correct DATA item—the

number of menu options—into a memory variable called NUMITEMS. Each READ moves the data pointer to the program's next DATA item. RESTORE is not needed when the program first starts, since by default the pointer refers to the first DATA item (in line 180). However, because the program repeats itself, this RESTORE is necessary.

The third statement in line 50 uses the GOSUB statement to run a subroutine (a group of statements executed as a unit) starting on line 260. This subroutine displays the menu's title, centered at the top of the screen. Line 260 READs the next data item—the menu title on line 190—into the string variable TITLE\$. String variables contain text rather than numbers or other types of data; their names usually end in a dollar sign (\$).

Line 270 displays the title. 'LOCATE 1,35' places the cursor on line 1, column 35; 'PRINT TITLE\$' displays the title, starting at the new cursor position. When the subroutine is finished, the RETURN statement in line 280 returns control to line 60.

```

10 REM -- Do-it-yourself menus
20 REM -- (C) Copyright 1990 Marty Franz
30 REM -- display the menu
40 KEY OFF :CLS
50 RESTORE 180 :READ NUMITEMS :GOSUB 260
60 FOR NUM=1 TO NUMITEMS
70   READ ITEMS$,CMD$:LOCATE NUM+3,20:PRINT NUM,ITEMS$
80 NEXT NUM
90 REM -- get the menu option
100 LOCATE 23,1 :PRINT "Menu choice"; :INPUT CHOICE
110 IF CHOICE>1 AND CHOICE<=NUMITEMS THEN GOTO 150
120 IF CHOICE=1 THEN SYSTEM
130 BEEP: LOCATE 25,1:PRINT "Bad choice; try again";
140 GOTO 100
150 GOSUB 300
160 GOTO 40
170 REM -- menu data
180 DATA 5 'number of items in menu, counting exit
190 DATA "Main Menu":' menu title
200 DATA "Exit menu","Exit"
210 DATA "Format drive A:","C:\DOS\FORMAT A:"
220 DATA "Norton Utilities","C:\NORTON\NI.EXE"
230 DATA "WordPerfect","C:\WP51\WP.EXE"
240 DATA "Q&A","C:\QA\QA.EXE"
250 REM -- subroutine to print title
260 READ TITLE$
270 LOCATE 1,35 :PRINT TITLE$;
280 RETURN
290 REM -- do command choice
300 RESTORE 200 'restore options, not count or title
310 FOR NUM=1 TO CHOICE
320   READ ITEMS$,CMD$
330 NEXT NUM
340 CLS: SHELL CMD$
350 LOCATE 25,1: PRINT "Press any key to resume...";
360 CS=INPUT$(1)
370 RETURN
380 END
  
```

LISTING 1: Type this code using any text editor, and save it as MENU.BAS, altering lines 200 through 240 to suit your own system.

DacEasy™ Accounting Treats Small Business Like Big Business

Big Business Features at a Small Business Price

There's no reason why your small business should settle for anything less than the best accounting software. DacEasy Accounting 4.1 offers all the features, performance, and ease of use you would expect to find in an expensive, **BIG** business accounting system, for a price that fits your small business budget.

With over a half million users, DacEasy Accounting has become the worldwide leader in small business accounting systems. **New, Version 4.1** has 11 fully integrated modules with powerful features like transaction-oriented pull-down menus, unlimited transactions, auto-reversing transactions, instant lookups, cash management, product assembly, a versatile report generator, and built-in graphics. And for less powerful computers, there's DacEasy Accounting 3.1, the only full-featured accounting system for dual floppy systems!

A Big Commitment to Customer Support

It takes more than a great product to become the best selling accounting system. The new DacEasy Advantage Club provides a full year of priority telephone support, free revisions and updates, free editor disks, informative newsletters and more, for a low annual membership fee. With DacEasy you get **BIG** help, for a small price.

To help you get even more from your software, DacEasy offers a **BIG** choice of training resources, a Certified Consultant Program to provide you with names of qualified professional consultants in your area, and a full line of high quality forms and checks designed to work perfectly with your DacEasy software.

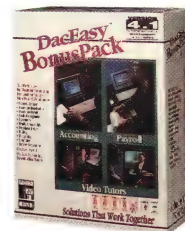
DacEasy is Ready to Grow with Your Business

As your small business grows, you can easily add to or upgrade your DacEasy Accounting 4.1 software.

DacEasy Payroll 4.1 is the **BIGGEST** value in payroll and personnel management software. And, the **BIGGEST** value in complete accounting and payroll software is the DacEasy BonusPack, which includes DacEasy Accounting 4.1, Payroll 4.1, plus an instructional Video Tutor.

When your business grows into a multi-user system, you can easily step up to the DacEasy Network Accounting System.

Don't think small when choosing your accounting software. Insist on DacEasy, the **BIGGEST** value in powerful, easy to use full featured accounting solutions.



\$229.95

Contact Your Local Dealer, Or Call

1-800-877-8088

In Canada call 416-940-3314

Media code: 231

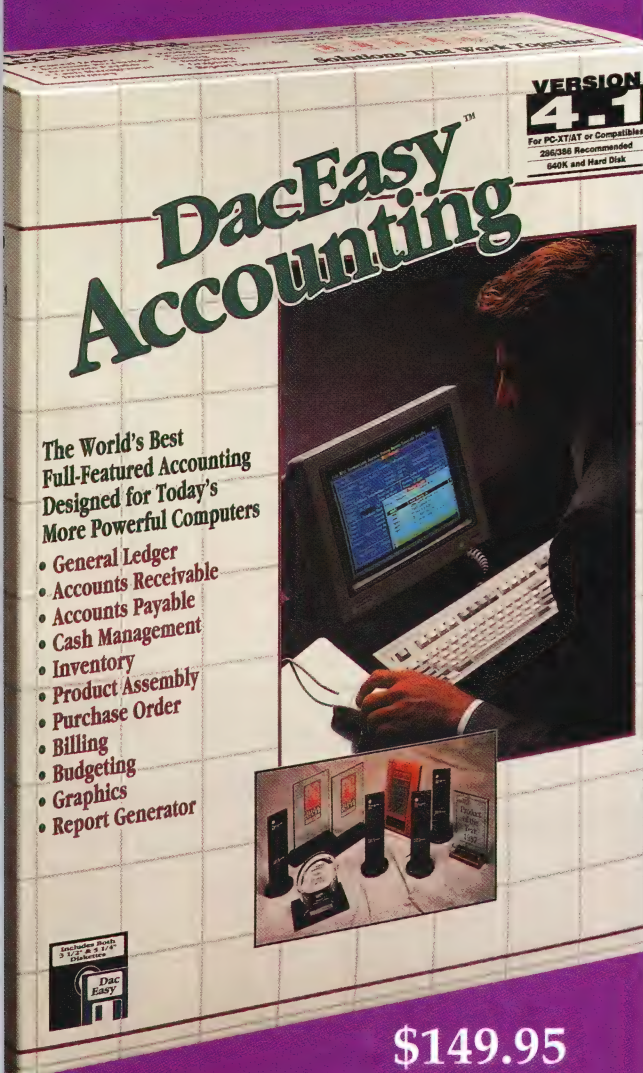


DacEasy, Inc.

17950 Preston Road • Suite 800 • Dallas, Texas 75252

Minimum Hardware Requirements: DacEasy Accounting 4.1 and Payroll 4.1 require an IBM or compatible PC, 640K RAM, hard disk, MS-DOS/PC-DOS 3.0 or later, mouse optional. DacEasy Accounting 3.1 requires an IBM or compatible PC, 256K RAM, 2 floppy drives, MS-DOS/PC-DOS 2.0 or later. DacEasy Network Accounting supports Novell, IBM PC NET, or any DOS 3.1 Net Bios compatible system, IBM or compatibles, hard disk MS-DOS/PC-DOS 3.1 or later. IBM, Novell, Microsoft, PC-DOS, MS-DOS are trademarks of their respective corporations. DacEasy is a trademark of DacEasy, Inc.

Circle 208 on reader service card



\$149.95

For versatility and ease of use, DacEasy
is hard to pass up.
- PC Magazine, April 10, 1990

When it comes to accounting packages, the easiest
takes the spoils (DacEasy).
- InfoWorld, March 5, 1990

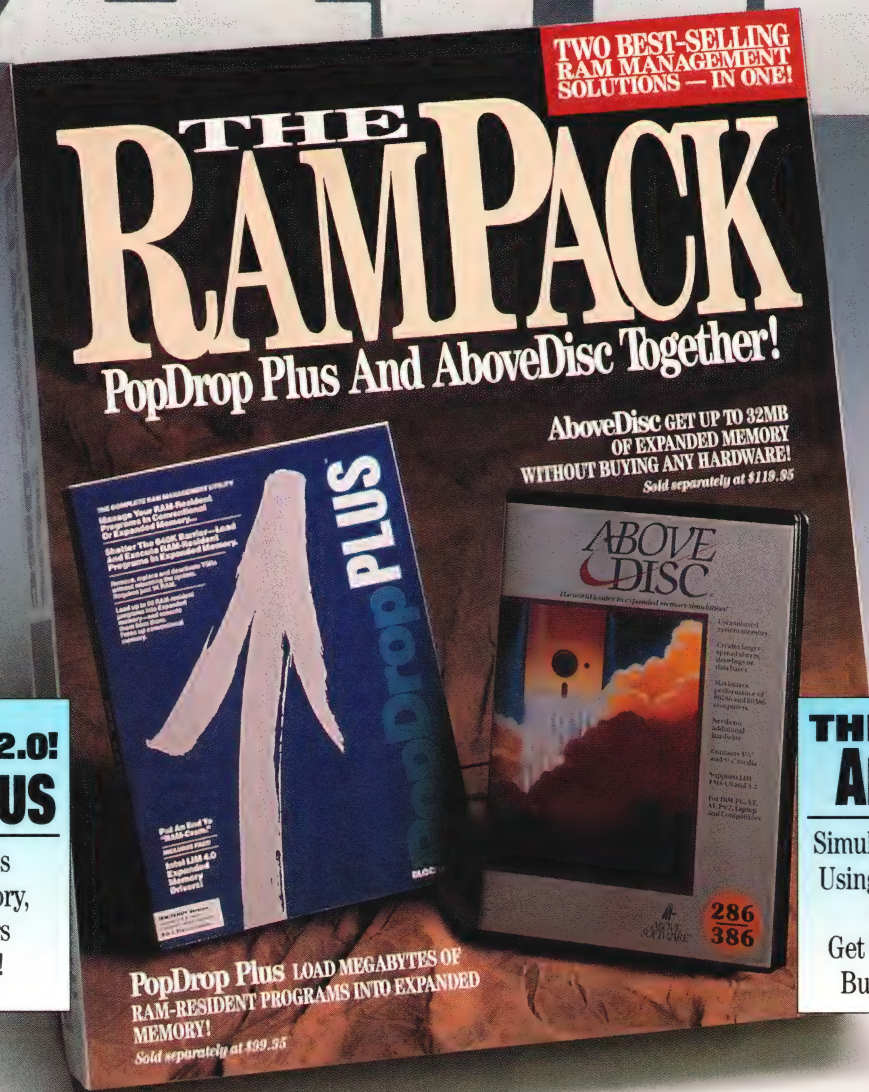


The Most Award-Winning Accounting Software Ever!

DacEasy Accounting 4.1 continues a winning streak that includes four *PC World* World Class Awards, two *PC Magazine* Editor's Choice, and two *InfoWorld* Product of the Year awards, making DacEasy the most award winning full-featured accounting software ever.

See Us at Fall Comdex Booth #N3252

SHATTER 640K



**TWO BEST-SELLING
RAM MANAGEMENT
SOLUTIONS — IN ONE!**

THE RAMPACK PopDrop Plus And AboveDisc Together!

**AboveDisc GET UP TO 32MB
OF EXPANDED MEMORY
WITHOUT BUYING ANY HARDWARE!**
Sold separately at \$119.95

NEW VERSION 2.0! PopDrop PLUS

Load Up To 50 TSRs
Into Expanded Memory,
Load Device Drivers
Into High Memory!

THE AMAZING ABOVE DISC

Simulate Expanded Memory
Using Extended Memory or
Your Hard Disk!
Get Up To 32 Mb Without
Buying Any Hardware!

SHATTER 640K.

The Definitive Solution To DOS' Crippling Restrictions!

Introducing The RamPack— New PopDrop Plus Version 2.0 and AboveDisc Together!

Here's the ultimate Memory Management team. The complete, easy to use software solution to the crippling memory restrictions of DOS — and the high cost of additional memory hardware — in one package.

Using them in tandem, AboveDisc allows you to utilize areas of your hard disk to actually create full-functioning Expanded Memory — up to 32 megabytes — without buying any additional hardware! You can load applications, files — and with PopDrop Plus, even load RAM-resident programs and device drivers (like network software, printer and mouse drivers, etc.) into this newfound expanded memory. Your computer will run lean and efficiently (saving your expansion slots in the bargain), with your conventional 640K left free for your larger applications.

AboveDisc

Turn Unused Hard Disk Space Into Full-Functioning Expanded Memory!

Here's how it works: AboveDisc seeks out all the

memory available on the motherboard beyond 640K, all the RAM on your extended memory board (much of it completely unused), or up to 32Mb of memory on your hard disk and actually transforms it into expanded memory. You'll have access to memory you simply never had before! — to run larger, more powerful applications and create bigger spreadsheets, drawings, desktop publishing documents and databases. AboveDisc is also a dream come true for laptop users.

You could spend up to \$1000 on hardware for just one single megabyte of expanded memory, or you can take advantage of this special offer and get up to 32Mb at this low price! And talk about compatibility — AboveDisc is compatible with these applications: Lotus 1-2-3 release 2.01 and 2.2, Lotus Symphony 2.0, Quattro 1.01, SuperCalc 5 Revision B, Microsoft Excel 2.1, WordPerfect 5.0 and 5.1, Aldus Pagemaker 2.0, DataEase 4.0, Enable OA 3.0, Quattro Pro, Zsoft's Publisher's Paintbrush, Generic CADD Level 3.

PopDrop Plus Version 2.0

Have Your RAM — And Use It Too!

PopDrop Plus lets you run your big applications and manage your RAM-resident programs. It now

loads device drivers such as network software, mouse drivers, etc. into high memory, giving you full use of your 640K. With PopDrop Plus, you have complete control: shatter the 640K barrier altogether by loading RAM-resident programs and device drivers into Expanded Memory.

Your RAM-resident programs will be at your fingertips for their usual fast access and execution. Even in Expanded Memory, RAM-resident programs are just a "hot key" away.

Incredible Savings!

Individually, AboveDisc and PopDrop Plus are best-sellers at \$119.00 and \$99.95 respectively, but during this limited time bundle offer, you can put them both to work for you for just \$139.00 — a \$79.95 savings over the regular \$218.95 retail prices!

See your dealer or call 800-888-4437 for more information. International inquiries call (305)443-8212. Or, fax us at (305)444-5010.

800 S.W. 37th Avenue, Coral Gables, FL 33134

PopDrop Plus is a trademark of BLOC Publishing.
AboveDisc is a trademark of Above Software.

Circle 259 on reader service card

Get the Support You Need FAST with Publish Magazine's... TECHNICAL SUPPORT

DIRECTORY

When you need technical assistance in a hurry, turn to the 1990 Technical Support Telephone Directory from the Editors of Publish, the world's leading authority on Desktop Publishing and Presentations.

DIRECTORY • TECHNICAL SUPPORT

Advanced Software, Inc.
1095 E. Duane Ave., #100,
Sunnyvale, CA 94086. (800) 346-
5392, (408) 733-0745.
PRODUCTS: DocuComp
TECHNICAL SUPPORT: (408) 733-0745
Hours: 8-6 PST
Unlimited free technical support to
all registered customers.

Advanced Vision Research, Inc.
2201 Qume Dr., San Jose, CA
95131. (408) 434-1115.
PRODUCTS: AVR 3000/CL, AVR 3000/
GS, AVR 302 Scanner/Interface,
MegaBuffer, MegaFont, MegaR-
ead, MegaScan, TIGerJET,
TIGerCUB, TIGerEMS,
TIGerOCR, TIGerPaint
TECHNICAL SUPPORT: (408) 434-1115
Hours: 8-5
No restrictions

**AGFA Compugraphic, Computer Graphics
Business Unit**
One Ramland Rd., Orangeburg, NY
10962. (800) 876-7543, (914) 365-
0190.
PRODUCTS: AGFA ChromaScript
PostScript RIP, Matrix PCR Digital
Film Recorder, Matrix ProColor
Desktop Digital Film Recorder,
Matrix Slidewriter Film Recorder,
Matrix TT200 Color Thermal
Printer
TECHNICAL SUPPORT: (800) 876-7543
Hours: 9-5
No restrictions; company prefers
customers to call their dealer first

Alacritty Systems, Inc.
88 Bartley Sq. C-6, Flanders, NJ
07836. (201) 584-0116.
PRODUCTS: Exact-2000D, Exact-2000P

Put the knowledge and experience of over 2,000 high-tech experts at your fingertips. End frustrating searches through outdated manuals. Solve problems faster. Save valuable time. And meet your deadlines hassle-free.

- Comprehensive — Lists 2,000+ products: Software, hardware, peripherals.
- Accurate — Verified listings by company and product with technical support phone numbers and policies. Updated annually.
- Easy-to-use — Wiro-bound to open flat for easy reference. Compact size. Space for notes with every listing.

**Find help fast and deliver
on schedule with Publish!**

ORDER AND SAVE 25%!



**ORDER NOW
AND
SAVE 25%!**

**Special Price
for Publish readers only**

~~\$15.95~~ **\$11.95**

**Call toll-free
1-800-284-8261
from 8 a.m. to
5 p.m. P.S.T.**

☐ **YES!** I want technical support
at my fingertips.

Please send me ____ copies of the 1990 edition of
Publish magazine's Technical Support Directory
— at the pre-publication price of \$11.95 plus \$2
shipping and handling for each copy.

☐ My check for \$_____ in U.S. currency is
enclosed, payable to Publish. CA residents add 6.75% sales tax.

☐ Please charge my Visa/MasterCard account:

Visa/MasterCard #: _____
(circle one) exp.: _____

Name: _____

Organization: _____

Address: _____

City: _____ State: _____

Zip Code: _____ Phone: (____) _____

Signature: _____

(Orders cannot be processed without signature)

Mail to: Publish Subscription Dept., 501 Second Street,
San Francisco, CA 94107.

Or for fastest service fax to 1-415-442-0169, or call
toll-free 1-800-284-8261 from 8 am to 5 pm PST.

Loopy Logic

Lines 60 through 80 comprise a loop that displays the menu items. Line 60 defines how the loop repeats itself. The first time it runs, the variable *NUM* has a value of 1. Each time the loop finishes, the value of *NUM* goes up by 1, and the loop starts again. When the value of *NUM* passes that of *NUMITEMS*—the number of menu items—the loop stops running.

Since the READ statement in line 70 has two variable names, *ITEM\$* and *CMD\$*, it reads the next two data items. The first time the loop is run, it sets those two variables with the values of the items in line 200, 'Exit menu' and 'Exit'. The rest of line 70 displays the screen prompt for that menu choice. 'LOCATE NUM+3,20' puts the prompt on row 4—remember, *NUM* equals 1—where 'PRINT NUM,ITEM\$' displays '1 Exit menu'. When the loop runs again, *NUM* equals 2, the READ picks up the data on line 210, and '2 Format drive A:'

is displayed on line 5.

Lines 100 through 150 wait for you to type a number; then respond to what you type. Line 100 captures the number typed into a variable called *CHOICE*. If *CHOICE* is between 2 and *NUMITEMS* (translation: if it's a proper menu choice other than Exit), line 110 skips to line 150, which starts the subroutine beginning on line 300.

If *CHOICE* isn't between 2 and *NUMITEMS*, line 120 checks to see if it equals 1. If it does, the SYSTEM command exits the menu and BASICA. If *CHOICE* isn't between 1 and *NUMITEMS*, you typed an incorrect choice, and line 130 will beep and display an error message; then line 140 will start the input over again.

The subroutine in lines 300 through 370 launches the selected program. First it counts data statements until it reaches the one selected. Next, line 340 clears the screen, then uses BASICA's SHELL statement to run the selected

menu option's DOS command ('C:\DOS\FORMAT A:', 'C:\NORTON\NI.EXE', and so on).

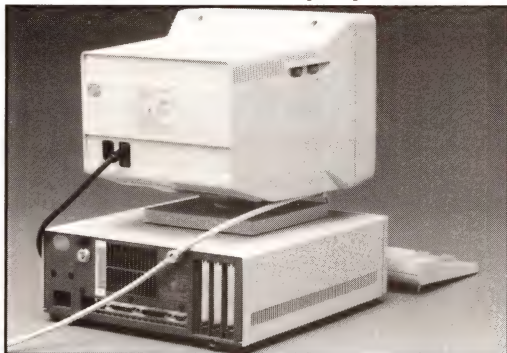
When the called program is finished and control returns to BASICA, line 350 displays a 'Press any key' message at the bottom of the screen, and line 360 waits until a key is pressed. This keeps any data on screen from being overwritten before you've read it. Once a key is pressed, the subroutine is finished, and the program returns to line 160, which in turn goes to line 40, bringing up the menu again.

Simplicity Itself

BASICA may not be the fastest or most powerful of languages, but it's useful for simple utilities and, best of all, most vendors throw it in free with DOS. Browsing through the manual or a third-party book will help you discover more of its capabilities. And if you find yourself getting serious about BASIC, you can always invest in a compiler, such

PREVENT COMPUTER THEFT!

Kablitz™ Security System



- Standard **Kablitz** fasteners attach to equipment using existing screws. When cable passes through fasteners screws are concealed.
- Internal component security: **Kablitz** fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives.
- Now available: new **Kablitz** glue-on fastener to secure equipment that does not have existing screws.

Kablitz works with:

- | | | | |
|---------------|------------------|---------------|-----------------|
| • Computers | • Monitors | • Laptops | • Fax Machines |
| • Printers | • Keyboards | • Typewriters | • Copy Machines |
| • Disk Drives | • Laser Printers | • VCR's | • Audio Visual |

Prices \$34.95* to \$49.95* depending on system. Quantity pricing available. Money back if returned in 30 days. Purchase orders accepted. Send for catalog. *plus shipping

Secure-It, Inc. 18 Maple Court • E Longmeadow, MA 01028

1-800-451-7592, 1-413-525-7039 Dealer's Inquiries Invited.



Circle 31 on reader service card

Protects while you type!



- **Remains in Place** while you use your computer.
- **Avoids Costly Repairs.** Protects delicate electronics from dust, spills, smoke, ashes, staples.
- **Soft, Flexible,** retains normal keyboard feel.
- **Washable, Durable High-Tech Polymer** lasts years.
- **Hundreds of Models.** SafeSkin is available for most PCs, laptops, workstations and clone keyboards.
- **Office • Home • Factory • Classroom • Laboratory**

List Price \$29.95. Please call or write for free color brochure. Dealer inquiries encouraged.

SafeSkin™
KEYBOARD PROTECTOR

Merritt Computer Products, Inc. 5565 Red Bird Center Drive
Suite 150, Dallas, Texas 75237/(214) 339-0753 • FAX (214) 339-1313
In Canada call 1-800-663-1061

Circle 217 on reader service card

How to build a high-paying career, even a business of your own, in computer programming.



**RICK BRUSH,
NRI PROGRAMMER/ANALYST**

Start with training that gives you hands-on programming experience—at home and at your own pace. Training that begins with BASIC, then continues with Pascal, C, and COBOL—today's hottest computer languages. Training that even includes a powerful IBM-compatible computer, modem, and programming software you keep.

Start with real-world training. The kind of training only NRI provides.

Now with NRI's new at-home training in Computer Programming, you can be one of today's highly paid, creative team of computer wizards who give computers the power to carry out an astonishing range of business, professional, and personal applications. Now, with NRI, you can be a computer programmer, ready to build a high-paying career—even a business of your own—making computers do anything you want them to do.

The only programming course that includes a powerful computer system and software you keep.

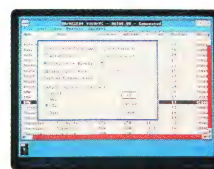
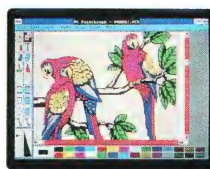
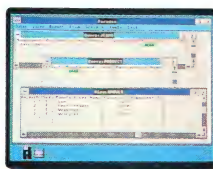
Unlike any other school, NRI gives you hands-on programming experience with a powerful IBM compatible West Coast computer system, including 2400

baud internal modem, 640K RAM, disk drive, monitor, and invaluable programming software—BASIC, Pascal, C, and COBOL—all yours to keep.

You get the experience and the know-how, the computer and the software to get to the heart of *every* programming problem, design imaginative solutions, then use your choice of four key computer languages to build original, working programs.

No matter what your background, NRI gives you everything you need to succeed in programming, today's top-growth computer career field.

You need no previous experience to build a successful programming career with NRI training. Indeed, your NRI lessons start by walking you step by step through the fundamentals, giving you an expert understanding of the programming design techniques used every day by successful micro and mainframe programmers. And then the fun really begins.



You master today's hottest computer languages, gaining the skills you need to build programs for a wide variety of real-world applications.

With your personal NRI instructor on call and ready to help, you use your computer and software to actually design, code, run, debug, and document programs in BASIC, Pascal,

C, and COBOL. Then, rounding out your training, you use your modem to "talk" to your instructor, meet other NRI students, even download programs through NRI's exclusive programmers network, PRONET.

Your career in computer programming begins with your FREE catalog from NRI.

For all the details about NRI's at-home training in Computer Programming, send the coupon today. Soon you'll receive NRI's fascinating, information-packed, full-color catalog.

Open it up and you'll find vivid descriptions of every aspect of your NRI training. You'll see the computer system included in your course up close in a special, poster-sized foldout section. And, best of all, you'll find out how your NRI training will make it easy for you to build that high-paying career—even a business of your own—in computer programming.

Send for your NRI catalog today. It's yours, free.

If the coupon is missing, write to us at the NRI School of Computer Programming, McGraw-Hill Continuing Education Center, 4401 Connecticut Avenue, NW, Washington, DC 20008.

IBM is a Registered Trademark of the IBM Corporation



Only NRI gives you an IBM-compatible computer with modem, 640K RAM, disk drive, monitor, and software—BASIC, Pascal, C, and COBOL—all yours to keep!

NRI School of Computer Programming

McGraw-Hill Continuing Education Center
4401 Connecticut Avenue, NW
Washington, DC 20008



YES! Please rush me my FREE catalog describing NRI's at-home training in Computer Programming.

NAME (please print) AGE
ADDRESS
CITY/STATE/ZIP 5497-100

Accredited by the National Home Study Council

"I Get Paid to Write Programs. And Now, I'm Writing Them Twice As Fast."

If you write programs for a living, get to know The Clarion Professional Developer® 2.1.

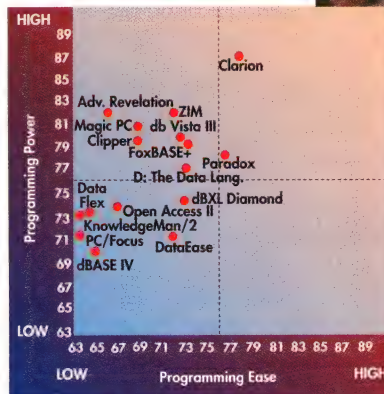
It can cut applications development time by 50% or more without compromising your design. It's so fast and easy, you can complete prototypes while your clients watch.

Professional Developer 2.1 can interface to routines from C and Assembler. It allows import and export of dBASE, BASIC and DIF files. Its application generator produces commented source code which can be easily adapted with its utilities to allow you to generate .EXEs. Network support is included at no extra cost. There are no run-time licenses or fees. And now Version 2.1 includes Report Writer, which allows you to easily and intuitively create ad hoc reports and queries (from Clarion files, non-Clarion files or any combination).

Professional Developer is an immensely powerful, easy-to-use DBMS application developer. We didn't say it: The PC WEEK poll of corporate satisfaction said it. We came out head and shoulders above the 15 other programmable databases. No one else came even close.

In this business where time is money, let Professional Developer help you generate more money for your time. Below is a partial list of our world-wide network of dealers.

For the one nearest you, call:
(U.S.A.) 800-354-5444 (Canada) 305-785-4555



Here's what American corporations in a PC Week survey thought of the power and ease of use of Professional Developer vs. competitors. Any questions?



CLARION SOFTWARE™

150 East Sample Road, Pompano Beach, FL 33064

Clarion Software Products run on any IBM PC, PS/2, or true compatible with 512K of memory and a hard disk. Clarion Professional Developer, is a registered trademark and Clarion Software is a trademark of Clarion Software. Copyright 1989 Clarion Software. dBASE is a registered trademark of Ashton Tate.



AZ, Phoenix
Computer
Warehouse
(800) 426-6659

CA, Arcata
Computer Price
Club
(707) 822-2656

CA, Huntington
Beach
Sina Scilife
(714) 536-6845

IL, Arlington
Heights
Peak Tech Inc.
(708) 255-0707

MI, Benton
Harbor
Video World
(616) 925-9105

NM, Hobbs
Palladium
Software
(505) 397-2346

OR, Hood River
Computerland
(503) 386-9311

SD, Sioux Falls
Ideasign
Computers
(605) 332-5655

CA, Valencia
Automotive Profit
Systems
(805) 257-0717

CA, Sacramento
Escape
Technology
(916) 366-8076

IA, Bettendorf
Unicom Service
Associates Inc.
(319) 355-6821

IN, Brazil
A Logic
(812) 442-8214

MN, Burnsville
Penta Midwest
(612) 895-8646

OH, Rossford
A-Better Computer
Service
(419) 866-3135

PA, Bloomsburg
Computer
Solutions Center
(717) 784-5008

WA, Puyallup
Cousineau Miller
& Associates
(206) 848-9276

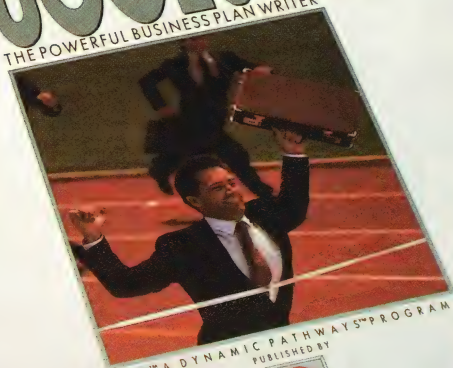
Circle 36 on reader service card

Starting your own business?
Looking for financing?
A solid business plan is
your strongest ally.

SUCCESS^{inc}

is the most powerful business plan
writer available... Comprehensive,
yet easy to use...

SUCCESS^{inc}
THE POWERFUL BUSINESS PLAN WRITER



*It practically
writes itself!*

Available
for all
IBM PCs
and
compatibles

For the IBM PC, XT, AT, PS/2,
and other 16-bit PC compatibles,
requires recommended
monitor, keyboard, mouse,
EGA and VGA display,
tablets,
and disks required.

SUCCESS^{inc}



Setting New Standards
in Business Planning



*"Without **Success inc**,
I wouldn't have been able
to get the bank loan to
start my business... It was
so easy to use!"*

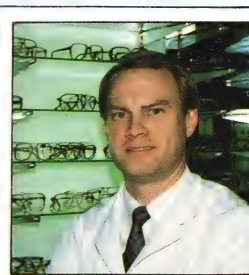
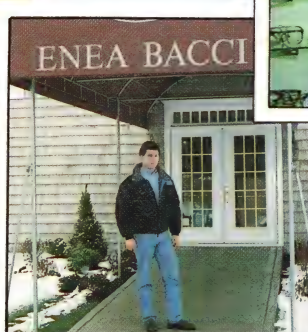
— Vienna Francken, owner,
Realware Distributing,
Palm Bay, Florida.

Users say the plan practically writes
itself! Examples tailored to your type
of business, street-wise tips and
financial worksheets are available
at the touch of a key.



"A Godsend of
a program.
We wish we had
Success inc
years ago. We're
using it to raise
several million
dollars to expand
our business into
Canada. It made
us think through
the business as
we had never
done before." —
Anne and
Guy Louise-Julie,
owners of Fairfax
Communications,
Milford,
Connecticut.

*"**Success inc** played the critical role in our securing
financing for the start up of our restaurant. The banks felt
we developed a very thorough plan." — Darryl Forrest,
partner in Bacci's restaurant, Southfield, Connecticut*



*"I heartily recommend **Success inc** to anyone in business
for themselves. It helped me plan the growth of my
optometry practice." — Dr. William Gordon,
Monroe, Louisiana.*



**\$30
EGGHEAD
COUPON**

Redeem this coupon at
Egghead Discount Software for \$30 off
Egghead's everyday low price of \$99.99 for
Success inc (list price \$129.99, your
price \$69.99). Good on purchases from
September 15 to December 15, 1990.

Discount
EGGHEAD SOFTWARE
America's Software Eggsperts

DISTRIBUTED BY



A DYNAMIC PATHWAYS
PROGRAM

18001 Cowan, Ste. A, Irvine, California 92714 (714) 833-8710

Circle 286 on reader service card

Automenu®

Now the power
is at your fingertips

- ✓ Eliminate DOS Training
- ✓ Password Protection
- ✓ Network Compatible
- ✓ Non Memory Resident
- ✓ Single Keystroke Access to DOS Applications



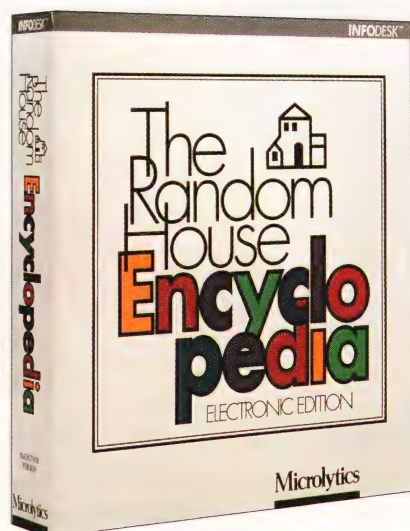
To order Automenu® call
For sales information call

1-800-662-4330
404-446-0271

Call for a FREE demonstration diskette

ANOTHER PRODUCT OF MAGEE ENTERPRISES, INC.

Put the Encyclopedia on your hard disk!



Microlytics introduces THE RANDOM HOUSE ENCYCLOPEDIA®—a proven best seller with over 200,000 copies sold. This electronic reference tool is part of Microlytics' new INFODESK™ line of products. Once you own THE RANDOM HOUSE ENCYCLOPEDIA, you can purchase additional reference works such as INSIDE INFORMATION and access them from within THE RANDOM HOUSE ENCYCLOPEDIA. The INFODESK series is software based—CD ROM NOT required.

MS-DOS and
APPLE MACINTOSH **\$119⁰⁰**

Microlytics

2 Tobey Village Office Park, Pittsford, NY 14534

CALL 1-800-828-6293 IN NYS 716-248-9150

as Microsoft's *QuickBASIC*, for faster and more powerful programs. ☼

Marty Franz is a freelance writer and a software engineer with Allen Testproducts, a manufacturer of automotive test equipment in Kalamazoo, Michigan.

POWER TIP NO. 136

Garbage In, Garbage Out With Windows 3.0

Windows 3.0's File Manager makes deleting files as easy as throwing out the trash. But if you're erasing a bunch of files inside nested subdirectories, File Manager prompts you before deleting each file. For faster deletes, select the Confirmation command from File Manager's Options menu. A small window that lists four deletion options will pop up. Normally, you'd leave all four boxes checked. But when deleting nested subdirectories, turn off the first and second choices, 'Confirm on Delete' and 'Confirm on Subtree Delete', and then select OK to get back to File Manager's main display. Highlight the directory you want to erase, and press <Delete>. File Manager will erase all files in the selected directory and any subdirectories below and also remove the emptied directories. (Deletions are immediate—you will not be given a chance to change your mind, so be careful!) When you're finished, be sure to switch all four default Confirmation options back on.

Tom Swan
Contributing Editor

PC Paintbrush IV Plus



Now you can scan, create, edit and dramatically enhance images. All with one program: the new PC Paintbrush IV Plus.™ It brings you all the power of ZSoft's PC Paintbrush IV™ – and builds in complete scanner control, large image support and other powerful pluses.

Image enhancement.

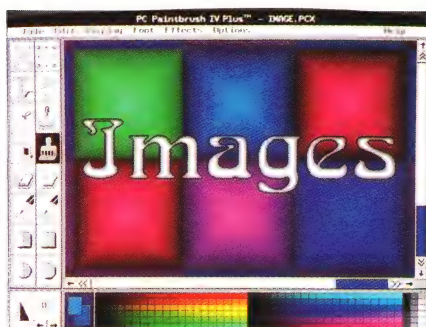
The new PC Paintbrush IV Plus is packed with innovations. New retouching features let you blend, lighten, darken, adjust contrast, change tints and blur portions of any image. New image processing functions let you automatically correct poor originals. It's like having a photo lab in your computer!

Persuasive presentations.

For compelling overheads, slides and documents, choose from a huge arsenal of features. For example, use the "tiling" feature to create 3-D effects and intricate textures. Automatically shadow, outline and graduate text for dynamic effects. Load and save PCX and TIFF images. Capture screens. You can even overlay two images.

Intuitive interface.

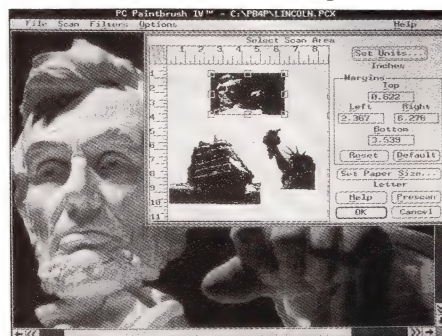
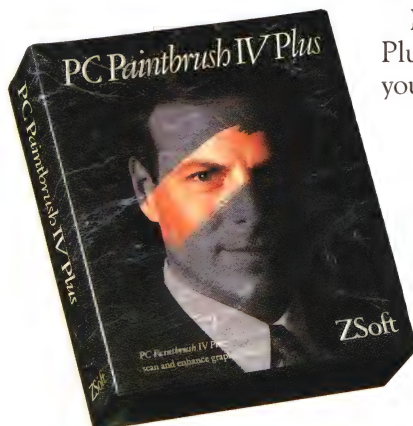
PC Paintbrush IV Plus is packed with convenience: Pull-down menus, customizable screen layouts, graphically labeled options,



Dress up your documents and presentations with gradient color backgrounds, impressive text effects, and automatic patterns.

Scanning power.

Control your scanner from *within* PC Paintbrush IV Plus. Scan and edit full-page, black-and-white, gray-scale and color images with a 640K system. Rescale images (25 to 400 percent). And with the unique pre-scan feature, simply frame the precise area you want, then scan *only* that area at high resolution.



Complete control of your scanner... select resolution, half-tone pattern, brightness, contrast and rescale from 25 to 400 percent.

multiple levels of context-sensitive help, and a combination of mouse control and keyboard accelerators.

Move up to PC Paintbrush IV Plus. It's the perfect finish to what your scanner started.

ZSoft
CORPORATION

450 Franklin Road / Suite 100
Marietta, Georgia 30067
(404) 428-0008
FAX: (404) 427-1150

© 1989 ZSoft Corporation

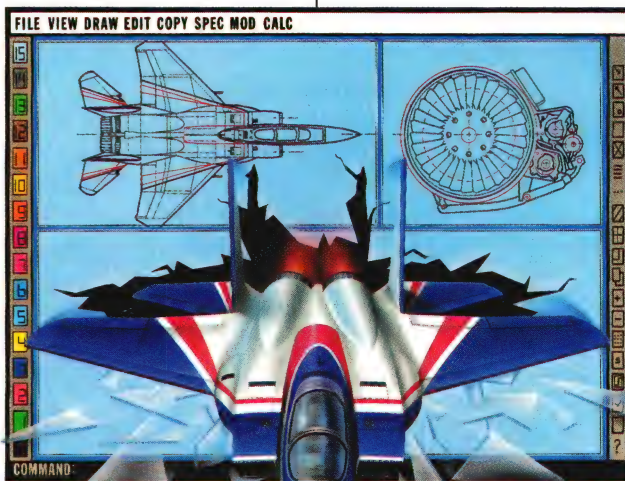
PC Paintbrush IV and PC Paintbrush IV Plus are trademarks of ZSoft Corporation.

To update, send \$50 plus \$4.90 shipping and handling and your original PC Paintbrush Plus program disk to: ZSoft Update, Dept. WX, P.O. Box 8123, San Francisco, CA 94128. Specify 5.25" or 3.5" disk. CA (6%) and TX (7.5%) residents, add sales tax. Canadian customers, add \$15.90 for air shipping. Outside N. America, add \$15.90 for surface shipping or \$24.90 via air. Payments must be in U.S. funds by check, money order, VISA, MasterCard or American Express.

Circle 206 on reader service card

We got PC CAD off the ground.

► **FastCAD's unique interactive windows shatter productivity barriers.**



No other software lets you make a change in one window and see the effect "simultaneously" in as many as seven other windows.

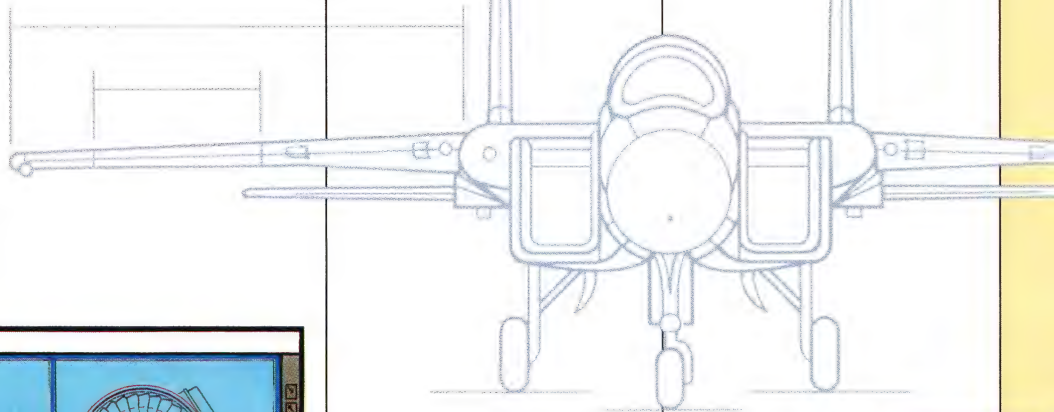
Leading software magazines and journals agree. No other program in the micro CAD world puts more productive time on your side than FastCAD. No wonder. Evolution Computing, the designer of FastCAD, helped get PC CAD off the ground over 10 years ago. We continue to pioneer the features that make other CAD programs work like they're standing still. Starting with interactive windows.

BEST OF



► **Eight simultaneously active windows.**

FastCAD's breakthrough interactive windows turbo charge performance by eliminating the need to zoom in to draw or edit, out to regain orientation, and then in again to draw or edit. You can actually draw a line from one close-up window to another and see the effect in all the windows simultaneously.



► **Plot unlimited views or scales on the same sheet.**

FastCAD is the only program that lets you put as many drawings, as many views of those drawings and as many scales as you like on the same plot or sheet. Plus, you can use FastCAD's time-saving scale X,Y command to shrink or enlarge objects in each direction independently.

► **FastCAD regenerates complex drawings faster than AutoCAD can draw.**

FastCAD's regen on an 8MHz XT is nearly twice as fast as AutoCAD's redraw on a 20MHz 386. FastCAD is also easier to learn and use than other market-leading micro CAD programs. In fact, FastCAD gives you the power to zoom, pan, change colors, layers and open, close or re-size windows—even while drawing a line, circle, box, polygon or other entity.



► Put **FastCAD next to AutoCAD® and the contest is over.**

That's what a top computer weekly publication said in an evaluation test. But why not let FastCAD speak for itself. Call or

The first, and still the fastest, 386 CAD. Now only \$795.



write FastCAD UK Distribution for comprehensive information and the name of your nearest FastCAD dealer. Put FastCAD to your own test. You will believe that CAD can fly.

EVOLUTION
FastCAD
COMPUTING

437 S. 48th St., Ste. 106
Tempe, AZ 85281-9936
Phone 602.967.8633

FastCAD is a registered trademark of Evolution Computing.
AutoCAD is a registered trademark of Autodesk.

Goodbye, Paper Chase Hello, Instant Recall™

Drowning in Information?

All those phone numbers, bright ideas, schedules, reports, stray facts, and to-do lists aren't going to stop coming at you fast and furiously.

You need a better way to manage it all. So everything's organized and at your fingertips. So separate pieces are pulled together into a coherent whole. And you can harness the information, using it to forge ahead in your work—better and faster.

Introducing Instant Recall: The First Personal Information Manager that really works

Instant Recall is the only full-featured PIM that's memory resident, popping up over any software you use—without interrupting your workflow. An incredible time-saver. And something no other personal information manager can offer.

Plus, it's memory-resident in just 32K (about half the memory needed by Sidekick®), leaving plenty of room for other programs.

Instant Recall replaces desktop organizer and text database software with an integrated solution. It makes connections between pieces of information. Gives you multiple perspectives. Creates time-lines from dates you've entered piecemeal. So it actually shoulders much of the work for you. And it's truly easy to start up and use.



Instant Information your way

Instant Recall takes any kind of information. Structured or freeform. Any single item can include up to 65,000 characters (over 30 pages) of text. And four familiar formats handle it all:

Notes: for freeform text—ideas, memos, lists, reports.

Tasks: for tracking and delegating, with priorities, target dates, advance notice.

Schedule: for managing time—with automatic conflict checking, recurring events, week-at-a-glance display.

People: for names, addresses, phone numbers, unlimited notes. With follow-up dates, auto dialer, address copy to any word processor—you'll never type an address again!

Integrated views make connections for you, speeding your work

Instant Recall lets you pull together notes, tasks, schedules, and people information on a single screen—by topic, date, person, priority, or embedded text.

Instant Recall also brings time-sensitive items to your attention on any date you choose. You can set advance notice for upcoming activities. View overdue items. Or automatically pop up alarm messages over other software.

Other unique features lighten your load

Instant Recall is the only general purpose PIM which offers a pop-up activity timer, a phone dialer, alarm messages, scheduling and tasks for multiple individuals and groups, automatic conflict checking, advance notice, and recurring activities.

Other convenient features include mailing lists and labels, direct copy of name and address to any word processor, overdue notice, follow-up dates, password protection, flexible printed reports, and a clipboard for exchanging text with other programs.

Ready to use right out of the box

Instant Recall comes ready to work for you from day one. An intuitive user interface and context-sensitive help make it exceptionally easy to learn and use. You don't have to retype information that's already on your computer—Instant Recall has a built-in clipboard for pulling information directly from other programs and ASCII files. Plus transfer utilities for Sidekick®, Tornado™, MemoryMate®, and delimited ASCII files.

Here's what the experts say about Instant Recall:

Power: "A truly impressive, productive way to manage information...the best personal information manager I've seen to date" **PCResource**

Ease of Use: "So intuitively designed, you can make use of the program virtually as soon as you boot it up" **INFO WORLD**

Value: "Instant Recall delivers high-end features at a bargain price" **PC MAGAZINE**

Try Instant Recall free for 30 days

Experience the difference Instant Recall makes—the remarkable gain in control, speed, and effectiveness. You can't lose. Because this cutting-edge PIM is completely guaranteed. If you're not 100% satisfied, simply return it for a full refund—no questions asked.

So order Instant Recall today. And be on top of things tomorrow.



Call toll free: 1-800-848-4970

I want to eliminate the paper chase with **Yes!** Instant Recall. I understand that this innovative PIM is completely guaranteed. If not completely satisfied, I may return it within 30 days for a full refund. Enclosed is my check for \$99.95 plus \$5.00 shipping and handling (AZ residents add 7% sales tax).

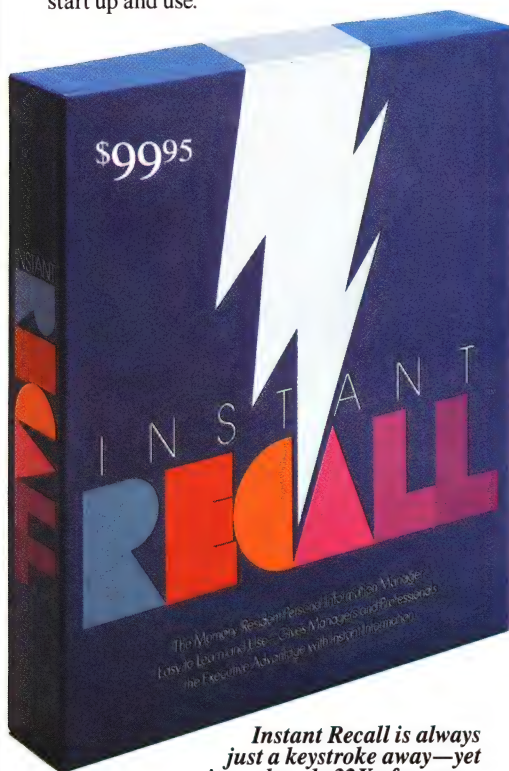
Name _____
Address _____
City _____
State _____ Zip _____
Day Phone (_____) _____
Check disk size: ☐ 5.25" ☐ 3.5"
Charge my ☐ Visa ☐ Mastercard ☐ Amex
Card # _____ Exp. _____
Signature _____

CHRONOLOGIC
CORPORATION

5151 North Oracle • Suite 210 • Tucson, AZ 85704
Tel (602)293-3100 FAX (602)293-0709

Toll free: 1-800-848-4970

PCW10



**Instant Recall is always
just a keystroke away—yet
it needs only 32K of memory**

Hardware Compatibility
IBM PC, XT, AT, PS/2, or compatible, 512K RAM (32K RAM in background mode), DOS 2.1 or higher (DOS 3.0 or higher for memory resident operation), at least 720K capacity on a single floppy or hard disk.

Circle 28 on reader service card

Now, helping them grasp your message...

Picture this. You've got a major presentation tomorrow. You've got all the right words. You've got all the right reasons. Meanwhile, somewhere deep in the art department are all the right visual aids, and "they're working on it."

There's an easier way. With DrawPerfect® and a few minutes, you can create overhead transparencies, add visuals to your printed handouts, create slide shows, on-screen presentations and improve the way you look.

And with DrawPerfect and WordPerfect® 5.1, you can raise your sights while you lower your learning curve. First, you'll discover many keystrokes are the same in both programs. Then you'll find how simple it is, using pull-down menus or function keys, with or without a

mouse, to jump back and forth between

DrawPerfect and WordPerfect and bring everything together.

DrawPerfect brings a host of possibilities to any presentation. It ships with 30 different built-in fonts, a variety of graph and chart types, a 500-image figure library, and great tools to draw, add color, create bulleted outlines, add fill patterns and accomplish what you need.

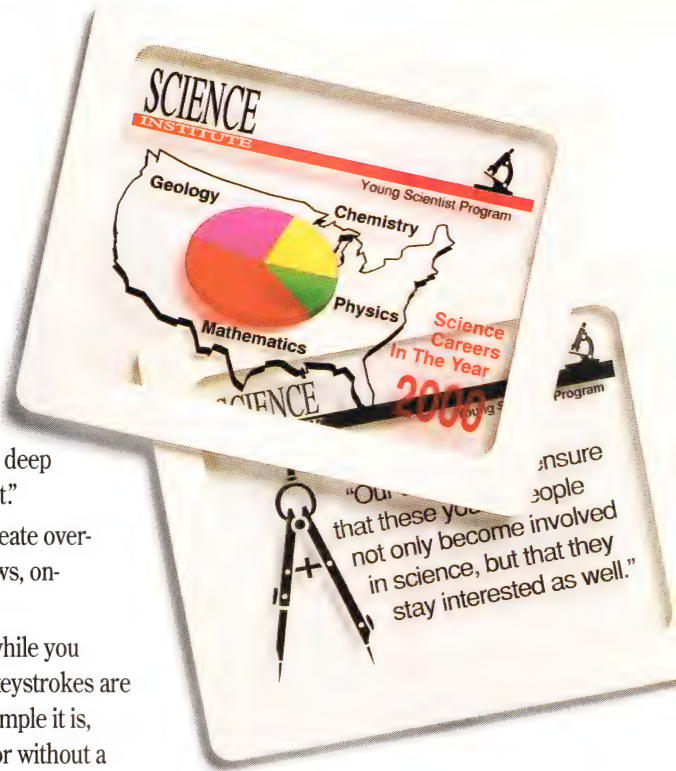
DrawPerfect lets you import spreadsheet data from PlanPerfect®, Lotus 1-2-3, Excel, and Quattro Pro. You can also integrate graphic files from any of 14 different graphic formats.

But best of all, you can bring in the talents of over 600 WPCorp support people. All ready to help you look your best, just a phone call away.

Once you've captured the ease and power of DrawPerfect, you'll be giving the art department the slip.

is well within your grasp. DrawPerfect.

Still think visual aids are out of your grasp? Just call 1-(900)-820-9555. For a \$4.00 phone charge to cover shipping and handling, we'll send you a demo disk for your PC compatible. The demo disk requires an EGA or VGA monitor along with a 5¼" high density or 3½" disk drive.



WordPerfect
CORPORATION

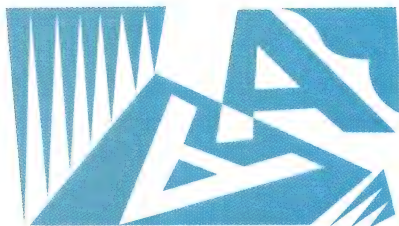
1555 N. Technology Way, Orem, UT 84057

Tel: (801) 225-5000 Telex: 820618 Fax: (801) 222-5077

WordPerfect, DrawPerfect and PlanPerfect are registered trademarks of WordPerfect Corporation in the United States. All other brands and product names are trademarks or registered trademarks of their respective companies.

©1990 WordPerfect Corporation.

Words Into Print



Word Processing

Tips for getting the most out of your word processor

This month: Make WordPerfect spel reel gud, customize Word dictionaries, and automate WordPerfect passwords.

George Campbell

Most industries and professions have a long list of jargon. Naturally, these words aren't in your word processor's generic spelling dictionary. You can add them to the main dictionary, but this may slow down spell-checking when you proof nontechnical documents.

You can solve this problem by creating custom dictionaries for each type of document. A typical system of dictionaries for a medical office is shown in **FIGURE 1**. This month we'll set up custom dictionaries in *WordPerfect 5.x* and *Microsoft Word 5.0*.

WordPerfect Dictionary Tips

To use *WordPerfect's* spelling checker, load a document and press **<Ctrl>-<F2>**. Then press **w** to check the current word, **p** to check the current page,

or **d** to proof the entire document. Press **l** to look up a word not in the document, or **c** for a word count. To exit the spelling checker, press **<F1>**.

WordPerfect limits you to one main dictionary plus one supplemental dictionary at any given time. You'd normally use the standard WP{WP}US.SUP supplemental dictionary, but you could create your own instead. Supplemental dictionaries are documents that you can edit like any other. This makes it easy to add words and merge or split dictionaries. To specify a default directory for a custom supplemental dictionary, press **<Shift>-<F1>lt<Cursor Down>** in version 5.1 or **<Shift>-<F1>ls** in version 5.0, then type the path and press **<Enter><F7>**. To create a user dictionary, type a word list, one word per line, then save it with a SUP extension in the named directory.

To use a supplemental dictionary, press **<Ctrl>-<F2>n** and enter the dic-

tionary's file name. The new dictionary replaces WP{WP}US.SUP, but only for the current session. While spell-checking, you can add new words to the current supplemental dictionary by pressing **3** when the program encounters an unknown word.

The SPELL.EXE program provides more customization options, but you must exit *WordPerfect* to use it. SPELL.EXE lets you add or delete words as well as combine or optimize dictionaries, sorting and compressing them for better speed. You must run SPELL.EXE if you want *WordPerfect* to display added words as alternative spellings. In contrast, the spelling checker within *WordPerfect* will suggest words only from its own word list, not words added by users.

Word 5.0 Dictionary Tips

To run *Word 5.0's* spelling checker, press **<Alt>-<F6>**. To check just a

WORDPERFECT SHORTCUT

Password Macro

WordPerfect 5.0 and *5.1* let you password-protect individual documents. A protected document won't load until you type the correct word, and each document can have a unique password. Here's a macro for version 5.1 that lets you add a password to any document with one keystroke.

1. Load *WordPerfect*, and begin recording the macro by pressing **<Ctrl>-<F10>**.

2. Press an unused key combination (perhaps **<Alt>-P**), type

password protect, and press **<Enter>**.

3. Press **<Ctrl>-<F5>pa<Enter><Enter>**. Don't enter a password now; *WordPerfect* can't store passwords in macros.

4. To finish macro recording, press **<Ctrl>-<F10>**.

To use the macro, load a document, then press **<Alt>-P** or whatever hot key you've chosen. *WordPerfect* will prompt you twice for a password. Enter the password both times. —G. C.

block of text, select the text before pressing **<Alt>-<F6>**. When the program spots an unknown word, a menu appears, allowing you to make a correction, ignore the word, quit checking, or undo the last correction.

You can also press **o** here to select more options. The first option identifies *Word*'s default user dictionary, **SPECIALS.CMP**. To change the default, type the complete path and file name of your supplemental dictionary. Next, choose *Complete* or *Quick* lookups. *Quick* lookups speed the session by assuming that the first two letters of a word are correct. Other options let you

Spell-Checking for Special Occasions

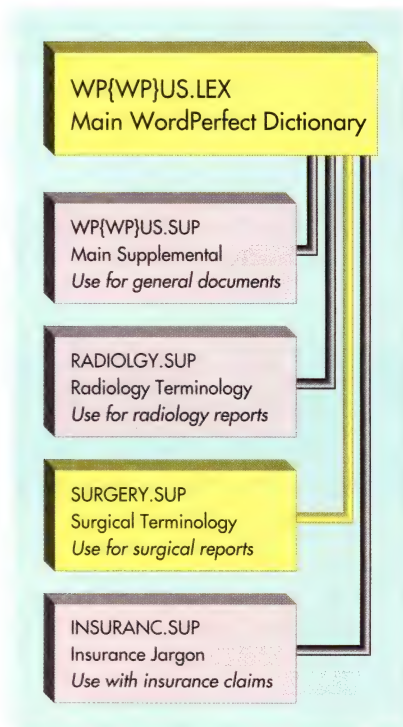


FIGURE 1: Here's a user dictionary system for a medical office using WordPerfect. Normally, you would use the read-only Main dictionary with the Main Supplemental dictionary—a read/write dictionary where you would add general terms used in all facets of the business. When writing a surgery report, however, you would replace the Main Supplemental dictionary with the specialized Surgical Terminology dictionary.

WORD SHORTCUT

Customized Spell-Checking

The best way to customize a user spelling dictionary is to work directly from a preproofed word list. With *Word*, that means entering a list of special words and then spell-checking it. Here's a *Word 5.0* macro that adds all new words on a list to the current user dictionary.

Type the actual characters below on a blank *Word* screen. Press **<Ctrl>-**[**** and **<Ctrl>-**]**** to create chevrons (**< >**).

<ctrl pgup>

<ctrl esc>ls

«while field <> ""»au«endwhile»

To save the macro, press **<Shift>-<F10><Esc>c**, type **add-words.mac**, and press **<Enter>**. To use the macro, load the desired dictionary, type a word list, and press **<Esc>i**. Then type **add-words.mac** and press **<Enter>**. To add the list to a different user dictionary, load it before running the macro. —G. C.

specify that *Word* ignore all-capped words or punctuation errors and let you turn off the display of alternative spellings. These settings become the defaults the next time *Word* runs.

During spell-checking, you can add an unknown word by pressing **a**. You're then asked whether you want to add the word to the standard dictionary, the current user dictionary, or a document dictionary. Add words common to all documents to the standard dictionary, and store specialized words in the appropriate user dictionary. Document dictionaries are rarely needed; they work only with a specific document and load with the document automatically.

To create or add words to a user dictionary in *Word 5.0*, you must run the spelling checker. Type a word list, and then press **<Alt>-<F6>** to start spell-checking. Press **o** at the first unknown word, and enter your dictionary's path and file name (*Word* adds a **CMP** extension). If the dictionary doesn't exist, *Word* prompts you to create it. At each unknown word, type **au** (Add User) to add the word. When you're done, select *Exit*. This month's *Word Shortcut* provides a macro to automate this process.

Word's spelling checker does have some limits. It doesn't propose added

words as alternatives to words it doesn't recognize, and it can't optimize dictionaries. Also, it won't recognize plurals, possessives, or mixed-case words like *dBASE* unless you first add these words to your custom user dictionary. ●

George Campbell is a contributing editor for PC World.

POWER TIP NO. 137

Use Your Computer as a Typewriter

To type directly from keyboard to printer—a quick and easy way to do an occasional envelope—type **copy con prn** at the DOS prompt and press **<Enter>**. There's no word wrap, and you can correct only the current line. At the end of the last line, press **<Ctrl>-Z** **<Enter>** to print your lines and return to DOS.

*Stephen L. Danago
Biloxi, Mississippi*

THE GOLD STANDARD. NOW IN BLACK.



Unique dual-locking mechanism assures a tight, shock-resistant seal.

Now that data processing has outgrown the controlled environment of the "Computer Room," it's become a tough world for the floppy disk.

Today diskettes are at work almost everywhere. Even in such inhospitable environments as bumpy airplanes, crowded commuter trains, and dusty factories.

All putting your invaluable data at risk.

Now Maxell introduces the MF2-HD Super RD.

With advanced technology whose time has come because

it assures outstanding performance even in extreme operating conditions.

The key is our revolutionary new Dual Interlocking Flex Shutter. Ten Maxell patents are pending on this unique mechanism, designed to protect the internal environment and to lock tightly even when accidentally jarred or dropped.

But MF2-HD Super RD superiority doesn't stop there.

New high-energy magnetic particles improve the signal-to-noise ratio by 10%, thus enhancing drive compatibility. The "superuniform" particle dispersion achieved in our Neo-Cross Linkage

Magnetic Layer delivers extremely stable output. And an improved HB lubricant and HT binder helps keep both disk and drive head free from foreign particles.

And the distinctive black shell, precision-molded of a super-flexible composite material, offers excellent drive compatibility and improved head-to-disk contact.

The Gold Standard. Now in black, and ready for your most demanding applications.

maxell
THE GOLD STANDARD



Maxell Corporation of America, 22-08 Route 208, Fair Lawn, NJ 07410

Need to enter all this into your PC?



TextPert™ Windows* does it in 3 easy steps.

SCAN/READ

EDIT

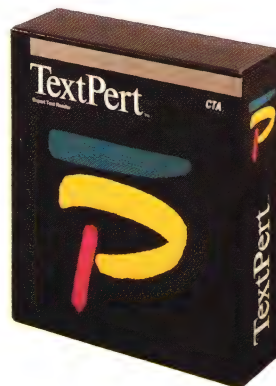
SAVE TEXT

Transfer essential data from paper form to computer format...

Data essential to the productivity of your office. Financial tables, mailing lists, internal reports and daily correspondence are instantly stored as text files, spreadsheets, databases. Live editable information as opposed to dead weight.

TextPert™ Windows increases your company's productivity by breaking the data entry bottleneck, without breaking your budget.

TextPert™ ICR
(Intelligent Character Recognition).



Call us at 1-800-252-1442



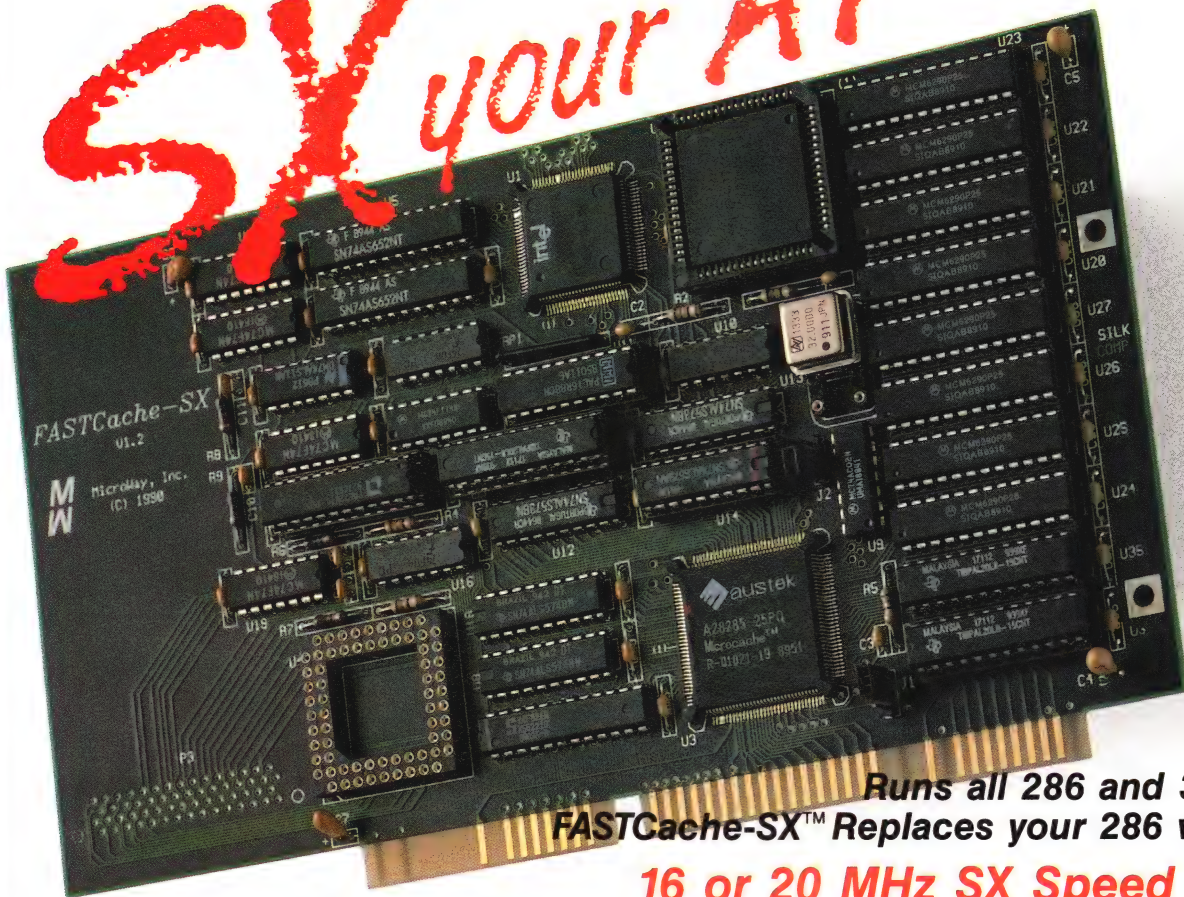
CTA
747 Third Ave., 3rd floor
New York, NY 10017
Tel: 212-935 2280
Fax: 212-9352272
Roger de Llúria, 50 entlo.
08009 Barcelona (Spain)
Tel: 343-318 4737
Fax: 343-302 5110

Programs for the future

* Windows is a registered trademark of Microsoft Corporation

Circle 53 on reader service card

SX your AT



Runs all 286 and 386 Software!
FASTCache-SX™ Replaces your 286 with a 386SX!

16 or 20 MHz SX Speed from \$495

If you currently use an 80286 and are hamstrung by the 640K memory limit or need more speed, you owe it to yourself to try a Microway accelerator. The FASTCache-SX plugs into your 80286 socket replacing it with a 16 or 20 MHz 80386SX. It is fed by a large four-way cache similar to the one built into the 80486. This results in zero wait state performance using ordinary AT memory.

Running on a 20 MHz FASTCache, the Landmark benchmark delivers 27 MHz for the CPU and 49 MHz for the FPU - four and eight times the throughput of the 286 and 287 that came with the original AT. It is 100% compatible with most 286 powered ATs running all your 286 and 386 software, including protected mode applications like Windows 3.0, DESQview-386 and, of course, Microway's NDP C-SX and Fortran-SX.

The Microway NDP Fortran-SX and NDP C-SX compilers generate the best code to take advantage of your 386SX. They feature excellent global optimizations not found in 16 bit compilers, plus the ability to take advantage of the 4 gigabyte address space of the SX. In addition, our complete line of ancillary products, including symbolic debuggers, profilers, virtual memory, plotting packages, windowing packages, graphics libraries and the NAG numerics libraries, can save you hundreds of hours moving your mainframe code to the SX. We also support the dialects you need, like VMS Fortran and ANSI C with the MS C DOS and graphics extensions. However, the best feature of these products is their price, just \$595 including the DOS Extender tools needed to run the SX in protected mode!

At a suggested list price of just \$495, the FASTCache-SX-16 is a real bargain!

Limited Offer - If you purchase a FASTCache-SX before October 15, we will bundle in a copy of the SX version of NDP-C, NDP-Fortran or NDP-Pascal for half price. For just \$795 plus the cost of an 80387SX you will be able to convert your 286 AT into a 32 bit development platform that will provide you with VAX performance for a fraction of the price! To order please call 508-746-7341.



Microway

World Leader in PC Numerics

Corporate Headquarters
P. O. Box 79, Kingston, MA 02364 USA
TEL 508-746-7341 • FAX 508-746-4678

U.K. 32 High St., Kingston-Upon-Thames, 081-541-5466
Germany 069-75-2023 Italy 02-74.90.749
Holland 40 836455 Japan 81 3 222 0544

Circle 191 on reader service card



**"When I bought the
Acer 386, I knew I made
the right decision.
The editors agree."**



Today's power users love the performance of the Acer 1100/33.

And industry leaders were so impressed, the system won PC Magazine Editors' Choice.

Praised for "breakneck processor and memory speed, durable construction, and thoughtful design and engineering," the Acer 1100/33 was cited as "a system for the long haul."

Loaded with the Intel i386™ DX 33 MHz processor, it has 4MB of system RAM, 1.2MB

Floppy Disk, 8 ISA expansion slots, 101-key enhanced keyboard, 2 serial ports, 1 parallel port and FDD/IDE disk interfaces.

Bundled with MS-DOS, MS-Windows/386, GW BASIC, mouse, and backed by our unique 4/8/12 warranty and on-site service, the Acer 1100/33 offers unsurpassed value.

You'll love the power of the Acer 1100/33. Call 1-800-SEE-ACER to see what it can do for you.

One look and you, too, will choose Acer.

Acer 

The Word for Value

GSA# G800K90AGS5321

Acer and the Acer logo are registered trademarks of Acer Inc. 386 is a trademark of Intel Corp. All other product names are trademarks of their respective manufacturers.
© 1990 Acer America Corporation

Circle 3 on reader service card

Spreadsheets (A..Z)



Spreadsheets

Practical tips for building better worksheets

This month: data base criteria, plain and fancy

Richard Scoville

The biggest benefit of setting up a data base is that you can zero in on just those records relevant to your current task. This month, we'll use 1-2-3's Data Query Extract command to extract records from a simple data base according to various criteria. First we'll create a sample worksheet (FIGURE 1), then we'll experiment with the sample criteria in TABLE 1.

To create the sample data base, first enter the labels and values shown in A1..D16. Note that because ZIP codes can begin with zero, they have to be labels, not numbers, so begin each with an apostrophe. Then use */Range Format Currency* to format the AMOUNT field, B2..B9.

As discussed last month, a 1-2-3 data base consists of an *input range* containing the records, a *criteria range* containing the selection criteria, and an *output range* to which Data Query Ex-

tract copies records that match the criteria. Use */Range Name Create* to define the input (CUST_IN), criteria (CUST_CR), and output (CUST_OUT) ranges, as shown in the range name table at F1..G7. Next, assign each field of the first record (A2..D2) a range name that matches its column heading. You can do this with a single command: Select */Range Name Labels Down*, paint the range A1..D1, and press <Enter>. Finally, assign the data base ranges by selecting */Data Query Input*, pressing <F3>, and selecting CUST_IN as the input range. Similarly, specify CUST_CR as the criteria range and CUST_OUT as the output range. Now you're ready to roll.

Exploring Criteria

TABLE 1 shows various sample criteria and their results. To try the first example, enter **Crosby** in cell A13, then select */Data Query Extract*; the single record matching the criterion is copied to the output range. To try the other examples,

first erase the old criteria: Select */Range Erase*, highlight the range A13..D13, and press <Enter>. Then enter the criteria as indicated (for example 2, enter '80001' in D13), and press <F7> to clear the output range and copy the matching records to it. (Pressing <F7> repeats the last Data Query command.)

The wild cards * and ? used in examples 3 and 4 make criteria more flexible. Entering multiple criteria in a single row (example 6) selects only the records that match all of them.

The rest of the examples use criteria formulas. The field range names make formulas clearer; '+AMOUNT>100' is easier to understand than 'B2>100'. Because the formulas include references to the data base fields, you can place them in any cell of the criteria range. (For instance, even though example 7 selects records based on the amounts in column B, you can enter it in cell A13.) Formula references to specific cells in the input range must be absolute; thus, example 8

A1: 'NAME				READY			
	A	B	C	D	E	F	G
1	NAME	AMOUNT	CODE	ZIP		AMOUNT	B2
2	Crosby	\$20.00	AX-200	90001		CODE	C2
3	Danko	\$243.90	BA-300	80001		CUST_CR	A12..D13
4	Dylan	\$99.22	BB-100	80001		CUST_IN	A1..D9
5	McGuinn	\$16.45	AX-200	70001		CUST_OUT	A16..D16
6	Nash	\$76.00	BA-100	90001		NAME	A2
7	Stills	\$123.12	DM-220	80001		ZIP	D2
8	Young	\$5.12	CS-19	00001			
9							
10	=====						
11							
12	NAME	AMOUNT	CODE	ZIP			
13							
14							
15							
16	NAME	AMOUNT	CODE	ZIP			
17							
18							
19							
20							

FIGURE 1: The sample 1-2-3 data base in columns A through D includes the input range (rows 1-9), the criteria range (rows 12-13), and the output range (from row 16 on). In a real data base, the criteria and output ranges would normally be to the right of the input range to make adding new records easier.

TABLE 1

Criteria Chart

Sample data base criteria for use with the worksheet shown in FIGURE 1.

	Criteria	Selects these records	Explanation
1	A13: Crosby	Crosby	NAME is Crosby
2	D13: '80001	Danko, Dylan, Stills	ZIP code is 80001
3	A13: D*	Danko, Dylan	NAME begins with D (* matches all following characters)
4	A13: ?a*	Danko, Nash	Second letter of NAME is a (? matches any single character in that position)
5	D13: ~00001	all except Young	ZIP codes other than 00001
6	C13: AX-200 D13: '70001	McGuinn	CODE is AX-200, and ZIP code is 70001
7	+AMOUNT>100	Danko, Stills	AMOUNT is greater than 100
8	+AMOUNT>\$B\$6	Danko, Dylan, Stills	AMOUNT is greater than Nash's AMOUNT
9	+AMOUNT=@MIN(\$B\$2..\$B\$8)	Young	Smallest AMOUNT
10	+AMOUNT>50#AND#AMOUNT<100	Nash, Dylan	AMOUNT is greater than 50 but less than 100
11	+ZIP="70001"#OR#ZIP="90001"	McGuinn, Crosby, Nash	ZIP code is 70001 or 90001
12	+ZIP>"1"#AND#ZIP<"9"	McGuinn, Danko, Dylan, Stills	ZIP code is between 20000 and 89999

SPREADSHEET TOOLBOX

More Memory With Beyond 640

Robert Lauriston

Even though plenty of expanded memory may still be available, 1-2-3 2.x gives you a 'Memory full' error when it fills conventional memory. Intex's *Beyond 640* breaks this barrier, letting you access up to 4MB of expanded memory. On my system, 1-2-3 2.2 had 2.5MB of expanded memory left when it ran out of conventional memory, but with

Beyond 640, it filled all expanded memory and still had a few kilobytes of conventional memory to spare. Four stars. Check it out.

Beyond 640 \$95; Intex Solutions, Inc., 161 Highland Ave., Needham, MA 02194; 617/449-6222, 617/444-2318 (fax)

Reader service no. 676

uses '\$B\$6', not 'B6'. (Disregard the 1 or 0 that displays in cells containing a formula.) The last three examples use logical operators (#AND# and #OR#) for more complex selections. Quotes are used in example 11 and in example 12 because the ZIP codes are labels rather than numbers.

Smart use of criteria is the secret to

exploiting the full power of Lotus's data base system. By creating variations on the sample criteria, you should be able to extract just about any set of records you need. ☺

Richard Scoville is a contributing editor and Robert Lauriston an associate editor for PC World.

POWER TIP NO. 138

Q&A for Different Tastes

Changes made at Q&A's Utilities Set Global Defaults screen are saved in a file called QA.CFG. If you want to have alternative, reusable configurations, save one configuration before creating another, and copy this file to another name, such as OTHER.CFG. To use OTHER.CFG, copy it back to QA.CFG. This copying back and forth can be automated with batch files that first copy QA.CFG to one name and then copy another file to QA.CFG. These batch files can be called from inside Q&A using the Alternate Programs option.

Lisa Goldstone
Marketing Communications
Specialist
Symantec Corporation
Cupertino, California

WORLD'S FASTEST PAGE RECOGNITION™



PARALLEL
READER

Now you can have the power of a typing pool right on your desktop – one capable of entering 2500 words per minute (220-700 cps)*. With the *Parallel Reader*™, you can literally read any document, regardless of font, font size (6 to 72 points) or column format – with greater accuracy than any other OCR system. Even one for twice the price!

Caere®, the company that brought you OmniPage®, now offers you the world's fastest, dedicated OCR peripheral – *Parallel Reader* – setting a whole new price/performance standard. Based on

Caere's proprietary AnyFont™ technology, this is the one OCR peripheral that should be on everyone's required reading list – fully integrated into every PC network.

Configured to support your scanner of choice, the *Parallel Reader* has the equivalent of 12 MIPs of raw power, supporting virtually any network through a standard PC-AT® bus. Characterized as a laser printer in reverse, *Parallel Reader* lets you send scanned throughput out over your network – effortlessly.

The *Parallel Reader* represents a powerful OCR capability, yet the plug-and-play design provides ease of setup, with a consistent, accessible user interface based on Microsoft Windows™. So it can have an impact on your business or organization – immediately.

Scan multiple pages into single or multiple files; collate multiple two-sided documents automatically. Supported by four coprocessor cards, *Parallel Reader* performs simultaneous page

recognition, giving you an accurate read on every document – only sooner.

Well-suited for technical publishing, high volume business applications, government or aerospace, the *Parallel Reader* is designed to help you meet the most challenging OCR requirements – efficiently and cost effectively.

To learn more about how you might bring the power of a typing pool to your desktop, contact an authorized Caere dealer.

The *Parallel Reader* from Caere, the Complete Recognition Company.

* Characters per second (cps), exclusive of scan time or image transfer.

Call: 1-800-535-SCAN
Or Write: Caere Corporation
100 Cooper Court
Los Gatos, CA 95030

CAERE®

Caere, the Caere logo, and OmniPage are registered trademarks of Caere Corporation. *Parallel Reader*, the *Parallel Reader* logo, AnyFont and World's Fastest Page Recognition are trademarks of Caere Corporation. All other trademarks are the property of their respective companies. ©1990 Caere Corporation. All rights reserved. Printed in the USA.

Circle 17 on reader service card



MINUTEMAN[®]

UNINTERRUPTIBLE POWER SUPPLIES

TOTAL POWER PROTECTION

- ★ BLACKOUTS
- ★ BROWNOUTS
- ★ OVERVOLTAGE
- ★ UNDERVOLTAGE
- ★ SURGES
- ★ SPIKES
- ★ EMI/RFI

STANDBY UPS MODELS

- 250 VA To 2300 VA
- Sinewave output - 1 millisecond transfer time
- Communications interface and external battery packs available for extended run times

ON-LINE UPS MODELS

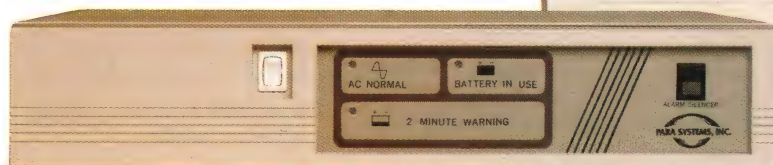
- 500 VA To 5,000 VA
- Static By-pass Standard
- True On-Line - Sinewave outputs
- Communications Interface and external battery packs available for extended run time



NETWORK MANAGER

- Shutdown software for unattended operation
- Only software to communicate with LANs and WANs
- Novell 286 VAP and 386 NLM
- SCO Xenix

SLIMLINE & UPRIGHT MODELS



COMMUNICATIONS INTERFACE

For Unattended System Shutdown

COMPATIBLE WITH:

- Novell
- LAN Manager
- ALTOS
- BANYAN
- VINES
- System V UNIX
- Custom Configuration Any System

NOVELL
Monitor Boards Available



1455 LeMay Drive
Carrollton, TX 75007

Telephone:
(214) 446-7363

FAX: (214) 446-9011 TELEX: 140275 OMEGA

1-800-238-7272

FOR L.A.N.
NOVELL LABS
TESTED AND
APPROVED
NetWare Compatible

"Distributed in over eighty countries"



Sometimes you have to take something away from a product to make it better.

So we took 100 things away from ArchiveXL® tape backup systems ... \$100 from the price.

Now, you can get the system PC World said "takes top honors for speed and convenience" at only **\$399** for the 40/60 megabyte system. But that's not all...

The ArchiveXL 40/60 and 80/120 systems also come with a free tape cartridge, worth \$28 retail.



Speed? ArchiveXL is ready to go in less than five seconds — while the others take two minutes to get off the ground. In fact, with a data transfer rate of 2.4 megabytes/minute you can backup over 4 megabytes before they're ready.

And the capacities you see are what you get. The ArchiveXL family goes all the way up to a guaranteed 124 megabyte capacity or even higher if you purchase data compression software.

ArchiveXL is Novell-certified, compatible with 3Com and Token Ring, operates under SCO UNIX/

XENIX and is PC and PS/2 compatible.

The easy-to-use QICstream® software is fully menu-driven, and can be configured to include all files or changed, included/excluded and date/time-of-creation files. It even allows you to schedule backup sessions any time, attended or unattended.

And Maynard's 48-hour end user replacement policy* and toll free product support are just two more ways we keep backing you up.

ArchiveXL: now more than ever your best buy in tape backup. They're at your dealer today. For any additional information call Maynard. **1-800-821-8782**



MaynardTM Electronics
An Archive Company

We're backing you one-hundred percent.

Marketing Communications, 460 E. Semoran Blvd.
Casselberry, FL 32707
1-407-263-3500 (USA)
011-44-628-890-515 (UK)

Maynard is a trademark of Maynard Electronics, Inc., Archive, ArchiveXL and QICstream are registered trademarks of Archive Corporation. 3Com, Novell, PS/2, UNIX and XENIX are trademarks of their respective trademark holders.

*Restricted to U.S.

Circle 120 on reader service card

Ventura Publisher introduces the Gold Series. It simply does more, any way you look at it.

And now there are several new ways to look at it. Because the desktop publisher that does more for you now does it all in the three leading PC environments.

The Gold Series introduces new Ventura Publisher® editions for DOS/GEM, Windows 3.0, and OS/2 Presentation Manager. That means new ease of use and learning as well as compatibility with hundreds more software applications. All three new editions can use documents from Ventura Publisher 1.1 and 2.0.

It does even more than before.

The Gold Series gives you much more than a choice of environments. At no extra cost, each edition includes our Professional

Extension and Network Server. So you also get such advanced DTP features as interactive table creation and scientific equation editing, cross referencing, and vertical justification.

And you get networking. So several users can edit and proofread simultaneously as well as share stylesheets and network resources. On Novell, IBM, 3COM, and other Windows- and OS/2 Presentation Manager-compatible networks.

Whether you're designing a newsletter or publishing a directory, you'll do it faster and more effectively with Ventura Publisher. Unique features give you more flexible and precise type control, and automate many

steps other programs make you repeat over and over. Ventura Publisher is the one DTP program that can handle all your publishing and design projects.

If you want to do more in desktop publishing, doesn't it make sense to use the program that does the most? Call today for more information about the new Ventura Publisher Gold Series. (800) 822-8221 in USA; (800) 228-8579 in Canada. For training information, call (800) 445-5554. Ventura Software Inc., a Xerox company.

**Ventura Publisher
Gold Series**
It simply does more.



Data Basics



Data Management

Tips and techniques for managing your data

This month: indexes demystified

Alan Schwartz

One problem with paper records is that they can be sorted only one way. If your invoices are filed by customer name, it's tedious work to find the first sale of September 30, or invoice number A-203. Keeping separate copies sorted by customer, invoice number, and date of sale requires a lot of extra work.

Computer data bases use *indexes* to effectively list the same records in different orders. An index works much like a library's card catalogs: It doesn't contain data, but it tells you where to find it. And just as the card catalogs list books by title, author, or subject, multiple indexes can list data in as many ways as you need. Furthermore, locating a record is much faster with an index—without one the program has to search through the entire table. Unlike card catalogs, indexes access data automatically and don't require user intervention to do their job.

In *dBASE III Plus* each index is a

separate file. To create a *dBASE* index, open the data file, then issue the command **INDEX ON key TO filename**. The *key*—a field, group of fields, or a formula involving fields—is the criteria for sorting the records. For instance, the command **INDEX ON CustID TO custidno** will create an index sorted by the contents of the CustID field and save that index to a file called CUSTIDNO.NDX.

Index names should reflect the DBF table files they belong to and their sort order. To alphabetize customer records by name, you'd use a command like **INDEX ON LastName + FirstName to CUSTNAME**.

Note that this key has two fields, ensuring that Fritz Freleng precedes Thomas Freleng. Index keys can include complex expressions and functions as

well. Indexing on **CTOD("12/31/80") - InvDate** will order the records by the InvDate date field in reverse order, from the most recent date to the oldest one. (The CTOD() function converts text strings to dates and—with versions prior to *dBASE IV*—is the only way to enter a date at the command line.)

Using and Maintaining Indexes

If a librarian places a new book on a shelf without inserting cards in the catalogs, it's as good as lost. Similarly, every index on a table must be updated when a record is added, purged, or changed. *dBASE* keeps indexes up-to-date transparently, *but only if the indexes are open*. Modify even one record without all of the file's indexes open, and

DATA BASE TOOLBOX

On dMAND

Ever been frustrated by the work involved in creating a simple report? Applied Microsystems' *On dMAND* offers a quick and easy way to get bare-bones reports from *dBASE* data. With virtually no learning curve, this utility lets you toss your first report to screen, printer, or disk in fewer than ten keystrokes.

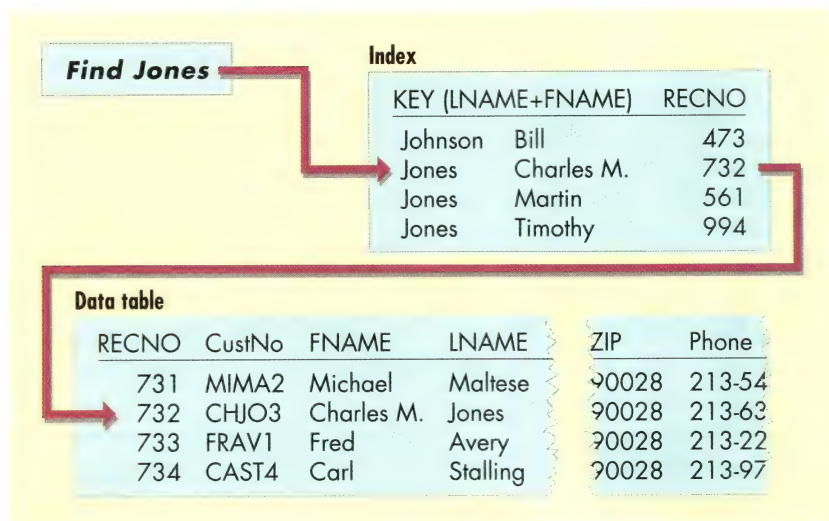
You can create simple columnar reports, labels, and summaries by selecting fields with your mouse or cursor keys. You can easily apply record selection criteria and a sort order to any field. You can save and distribute layouts with *On dMAND*'s royalty-free run-time.

But don't expect too much. You can't relate files, read memo fields, use indexes, format data, build expressions from functions, or sort more than 12,000 records. *On dMAND* permits only a one-line column heading, no page footers, and scant printer controls. Still, its utter simplicity will endear *On dMAND* to anyone who's overwhelmed by state-of-the-art report generators. The utility requires DOS 2.0 or a later version, 640K, and a parallel printer. —A. S.

On dMAND \$59.95; Applied Microsystems, Inc., P.O. Box 832, Roswell, GA 30077; 404/475-0832

Reader service no. 674

An Index at Work



A data base manager can search an index faster than it can search a data table, which is much larger and may not be in a convenient order. Once the correct key is found, the index points to the record in the data table.

you'll have to contend with apparently lost records, vexing error messages ('Record is out of range'), and incorrect reports. Many frustrated users have abandoned indexes altogether, incorrectly assuming that the indexing mechanism itself is buggy.

To avoid these problems, always open the indexes when you load a data file. This is done with the **USE** command, as in **USE customer INDEX custidno, custname**. The first index is the active one, controlling the record order; the others just tag along to keep abreast of changes. To make the second index active, use the command **SET ORDER TO 2**.

If you damage an index, don't worry. Your data is still intact—all you need do is recreate the index.

Searching With Indexes

To take advantage of indexing's speed improvements, use one of dBASE's index-specific search commands, **FIND** or **SEEK**. **FIND CHJO3** uses Charles Jones's Customer ID, for instance, to take you to his record, assuming that the **CUSTIDNO** index is active.

With **SEEK**, the search expression is the name of a field or a memory variable containing the item you're looking for.

For instance, if you want to find the customer whose ID number is in a variable called **mID**, use the command **SEEK mID**. Keep in mind that with both **FIND** and **SEEK**, you must still **EDIT** or **DISPLAY** the record to see it.

By reducing long searches to instant retrieval and switching sort orders in a flash, indexes greatly improve access to your data. And that, after all, is what data management is about.

Correction

The August *Data Basics* included a listing for validating input, but the listing was incorrect. It should have read:

```
DO WHILE In_date < (DATE() - 365) .or.;
In_date > DATE()
@ 8,3 SAY 'Invoice date: ' GET In_date
READ
IF In_date < (DATE() - 365) .or. In_date >
DATE()
@ 9,3 SAY "Invoice date must be..."
ENDIF
ENDDO
```

PC World regrets the error. ☹

Alan Schwartz is a partner in Micro-mega Systems in San Francisco, specializing in custom data base application development. Celeste Robinson is the author of *The Best Book of Paradox* (Howard W. Sams and Co., Carmel, Indiana, 1990).

PARADOX SHORTCUT

CoEditing by Yourself

Celeste Robinson

Paradox has two table-editing modes: Edit and CoEdit. Although CoEdit is designed for network use, it also offers advantages to a single user:

1. In CoEdit mode, table indexes are updated as each new or changed record is posted to the table. (In Edit mode, indexes are updated only after you press <F2>.) An up-to-date index speeds searches when zooming on a keyed field.

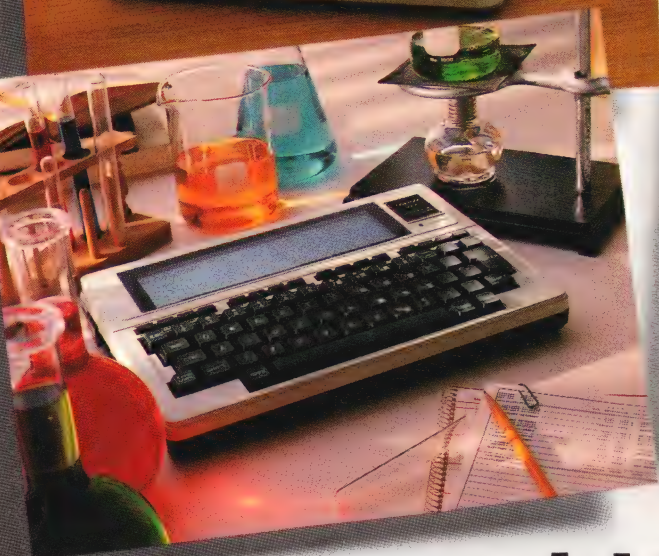
2. In Edit mode, *Paradox* maintains a transaction log for

updating the table and index files. Since CoEdit doesn't use a transaction log, it doesn't take as long when you update with <F2>.

3. Using CoEdit, you are warned of key violations immediately.

CoEdit has its drawbacks. Undo is limited to the last change made. Also, since indexes are updated automatically, records seem to disappear when you change their key fields. They are, of course, merely moving to their new position in the index.

With a Tandy® laptop, PC power is always...



...right at hand.

With Tandy's line of powerful laptops, there's no reason to leave your computer behind.

If you like to travel light, pick up the Tandy 1100 FD—the only notebook-size PC with instant-on DeskMate® word processing built in. At only 6.2 lbs., the 1100 FD is the ultimate PC compatible for combining portability and affordability.

Or grab the slim, 6-pound Tandy 1500 HD with a 20MB hard drive and DeskMate software. If you demand 286 power, our Tandy 2800 HD is ready to run, with 640 × 400 EGA graphics. Plus, there's the Tandy 102—the 3-pound portable that started the laptop revolution.

Get your hands on a Tandy portable today . . . you'll never have to be without your computer again.

Tandy Computers: Because there is no better value.™

Radio Shack®
COMPUTER CENTERS
A DIVISION OF TANDY CORPORATION

Circle 284 on reader service card



PC Proof. The People's Choice for Better Writing.

AT LAST.

PERFECT PROPOSALS,
PROFESSIONAL LETTERS
AND PRIZEWINNING
PRESENTATIONS.

SEE US AT PC EXPO NYC BOOTH #1681

Grin the wicked grin of confidence. Get to the point. Organize. Never worry about mistakes in spelling or usage.

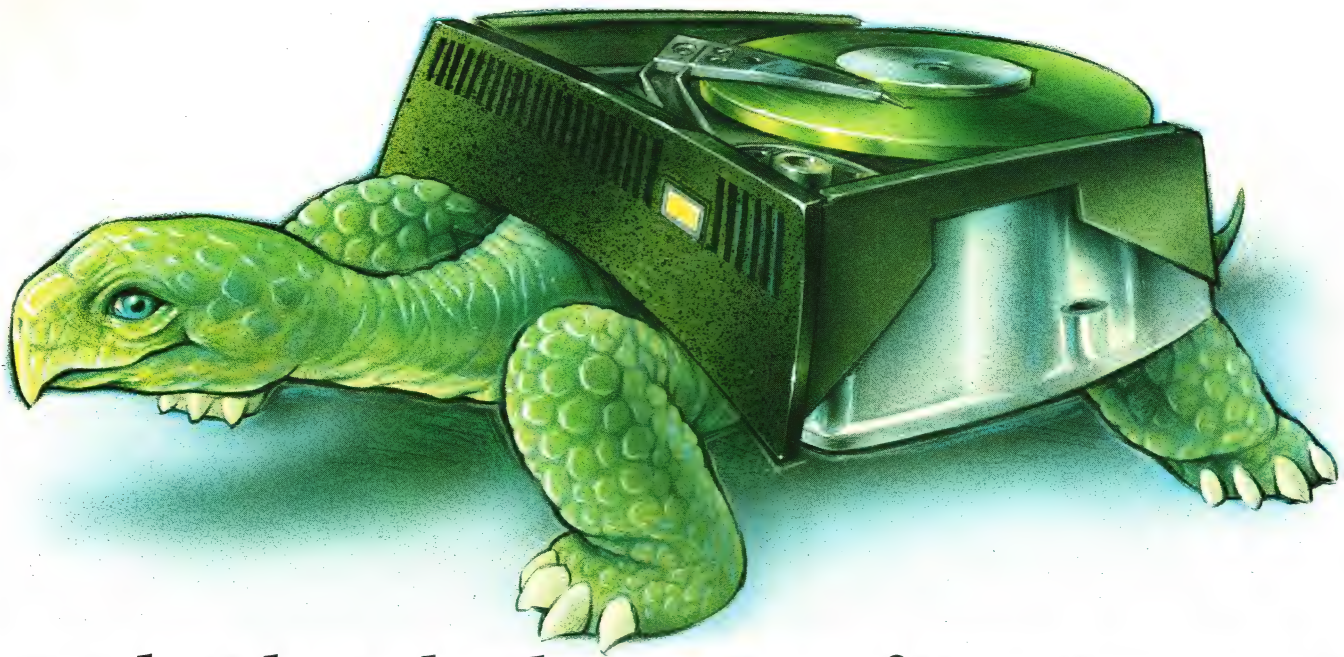
PC Proof is fully interactive and easy to use. Corrections are made instantly and the original document is updated, with no separate printouts to review.

Whether it's a business proposal, a letter or manual, a contract or a speech, PC Proof can help you refine your writing until it's letter perfect.

PC Proof. Proofreading and text-revision software for IBM and compatibles by Lexpertise. Now for only \$159.00 (suggested retail price). MacProof available for Apple Macintosh. For more information, contact your local dealer or call toll free 1-800-354-5656.

PC Proof requires 640K RAM and runs on MS-DOS or PC-DOS version 2.1 or higher. PC Proof is format-compatible with Microsoft Word 3.0, 4.0, and 5.0 and WordPerfect 4.2, 5.0 and 5.1. It is text-compatible with all ASCII files. Call Lexpertise for further information on product compatibility at 1-800-354-5656.

PC Proof YOUR ENGLISH PROOFREADER BY LEXPERTISE
Circle 126 on reader service card



Quick: What's the Slowest Part of Your Computer?

Stop Waiting for Disk Access— Get Vcache 5!

Even the fastest computer can move like a turtle when it's reading the same disk records over and over again.

The problem is the repetition built into DOS disk access. When your program reads or writes a record, your disk drive actually reads several records—FATs, directories and file records—on the way to the one you want. And when your application accesses its next record, DOS reads many of those same records over again! All that reading takes a lot of time, and causes a lot of wear and tear on your hard disk drive.

Vcache 5 stores hard disk data in system memory, giving you direct access—without waiting. Vcache uses fast electronic memory to cache the data you read from disk—even FATs and directories. When your application accesses the disk, Vcache looks in memory for the records you need before the disk is activated. If they're in cache memory, Vcache delivers them to you much faster than if they were read from disk.

The result: Vcache increases effective program speed by 300% or more—and extends the life of your hard disk!

Maximum Memory Flexibility—And More!

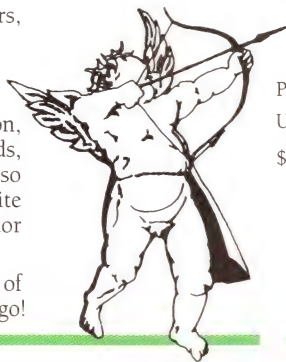
Vcache requires less than 9K of resident memory. Yet it can handle up to 15 MB of cache in extended or expanded memory.

Vcache lets you choose both the type and the amount of memory you want to use in the cache. The more memory you assign to the cache, the better Vcache performs.

Vcache is fully compatible with all XMS managers, DOS networks, DesqView, and Windows. In fact, benchmark tests show Vcache is 41% faster than SMARTDrive!

Vcache also includes the exclusive LookAhead option, that notices when you're accessing sequential records, and automatically stays a step ahead of you. Vcache also gives you options for maximum safety (with Write Through) or maximum speed (with Delayed Sector Writes).

Best of all, Vcache requires no setup or modification of the programs you're already running. Just install it and go!



Additional Acceleration—FREE!

When you see how much faster your disk runs with Vcache, your other peripherals may suddenly seem slow. That's why we've included a collection of accelerators for other parts of your system:

- Vkette: Accelerates diskette reads/writes by up to 800%
- Vscreen: Accelerates monochrome displays up to 300%
- Vkeyrate: Speeds up your keyboard with faster typematic rate and less repeat time delay

Other Vcache auxiliary programs display information about resident programs, perform comparative disk timing and more. And they're all FREE with your copy of Vcache!

Why Wait? Order Now!

Vcache is priced at just \$69.95. And it's unconditionally guaranteed: if you're not completely satisfied, return it within 90 days for a full refund.

Order your copy of Vcache now by calling (800) 284-3269. Or return the attached coupon.

Don't waste any more time waiting for your hard disk to perform. Get Vcache now!

Site Licenses Available. Compatible with MS-DOS or PC-DOS versions 2–4. Vcache is a registered trademark of Golden Bow Systems, Inc. All other brand and product names are registered trademarks of their respective companies.

I'm Tired Of Waiting! Send me _____ copy/copies of Vcache 5 now for only \$69.95 each!

Name _____

Company _____

Address _____

City _____ State _____ ZIP _____

Phone _____

Payment: ☐ Visa ☐ MC ☐ Check ☐ COD (\$3.00 Extra)

U.S. Shipping & Handling: \$4.00. CA residents add 7.25% sales tax

\$_____ Total Amount Enclosed

Golden Bow Systems

2665 Ariane Drive, Suite 207, San Diego, CA 92117

(800) 284-3269

Telephone (619) 483-0901 ■ Fax (619) 483-1924



Our Printer Sharing Unit Does Networking!

An Integrated Solution

Take our **Master Switch™**, a sophisticated sharing device, combine it with **MasterNet™** networking software for PCs, and you've got an integrated solution for printer and plotter sharing, file transfer, electronic mail, and a lot more. Of course you can also share modems, minis, and mainframes or access the network remotely. Installation and operation is very simple.

Versatile

Or you can use the Master Switch to link any computer or peripheral with a serial or parallel interface. The switch accepts over 20 commands for controlling the flow of data. It may be operated automatically, by command, or with interactive menus. Its buffer is expandable to one megabyte and holds up to 64 simultaneous jobs. The

MasterLink™ utility diskette for PCs comes with every unit and unleashes the power of the switch with its memory-resident access to the commands and menus.

Other Products

We have a full line of connectivity solutions. If you just want printer sharing, we've got

it. We also have automatic switches, code-activated switches, buffers, converters, cables, protocol converters, multiplexers, line drivers, and other products.

Commitment to Excellence

At Rose Electronics, we're not satisfied until you're satisfied. That's why we have thousands of customers around the world including large, medium, and small businesses, factories, stores, educational institutions, and Federal, state, and local governments. We back our products with full technical support, a one-year warranty, and a thirty-day money-back guarantee.



ROSE
ELECTRONICS

**Call now for literature or
more information.
(800) 333-9343**

Give a Rose to your computer

The Art of Persuasion



Publishing & Graphics

Expert advice for creating high-impact documents and presentations

This month: tips on choosing and using the right type, and customizing Ventura headers and footers

Richard Jantz

The typefaces you use affect the way people perceive you and your business. Depending on the type used, a document may appear casual or formal, modern or old-fashioned, routine or refined—any of which may be appropriate.

Neophytes starting out with the basic LaserJet rarely stray from Times Roman and Helvetica. But with the boom in cheap PostScript emulators and cartridges for the LaserJet, font generators like *Fontware*, the Intellifont-based LaserJet Series III, and cheap PostScript printers, users have more fonts to choose from—and picking the right ones can be daunting.

So this month we look at selecting and using type. All the typefaces men-

tioned below are available from Adobe, Bitstream, and other major vendors. Although effective typography is ultimately a question of personal taste, consider the following guidelines.

- Choose type that matches your document's message. Typefaces with

serifs (cross strokes at the ends of characters) often look traditional or elegant, while *sans serif* faces (without serifs) look modern and streamlined.

- As a rule, use serif type for *body text*—large blocks of copy typically 12 points in size or smaller. Serif charac-

NUTS & BOLTS

Customizing Headers and Footers in Ventura

Creating headers and footers in *Ventura* is easy if you use only one font, but combining fonts for a customized variation is trickier. You can assign only one font to a header or footer tag, and *Ventura*'s Set Font option (which appears in the assignment list in Text Editing mode) doesn't affect headers or footers. So how can you mix fonts? The answer is to insert *Ventura* formatting codes in the header or footer text when you create it.

For example, here's how to customize a centered footer, "LaserNews," with "Laser" set in Helvetica (or Swiss, if you're using a LaserJet) bold, and "News" in Times Roman (or Dutch) bold italic.

1. Start *Ventura* and open a chapter.
2. Select *Chapter*, then *Headers & Footers*. Click the *Right Page Footer* and *On* options.
3. Move the cursor to the first line of the 'Center:' label and type **Laser<F14BI>News**. F14 is the font code for Times (Dutch); BI is the bold italic code.
4. Move the cursor to the sec-

ond line of the 'Center:' label and click *Text Attr.* and *Page #*. This inserts '<D>[P#]' in the footer's second line. The '<D>' is *Ventura*'s default code and resets the text back to the default fonts, which you'll make Helvetica (Swiss) bold in step 6. The '[P#]' tells *Ventura* to paginate the entire chapter.

5. Click *Copy To Facing Page* to place the same footer on all left pages as well, and then click *OK*. The new footer will appear at the bottom of the page.

6. To specify the font for "Laser" in "LaserNews," click *Ventura*'s Paragraph Tagging icon, then click the footer. Select *Paragraph Font*, then *Helvetica Bold (Swiss Bold)*, pick the desired point size, and click *OK*.

You can use this same technique to insert other *Ventura* codes in headers/footers to mix font sizes, shift or kern text, add nonkeyboard characters (dingbats, fixed spaces, foreign-language marks), and so forth. For a complete list of the codes, consult the appendices in *Ventura*'s Reference Guide. —R. J.

ters are more legible, especially at small sizes. Good picks: Times Roman or New Century Schoolbook to project a conservative attitude; ITC Bookman or ITC Souvenir for a warmer tone; and Palatino, ITC New Baskerville, or ITC Garamond to add elegance and authority.

- Sans serif type is best for *display text*—short units of copy, such as titles, headlines, subheads, and pull quotes. Helvetica, News Gothic, Univers, or Gill Sans presents a neutral voice; ITC Avant Garde or Futura is good for a machinelike look; and ITC Franklin Gothic Heavy or Helvetica Black commands attention.

- Avoid monospaced “typewriter” fonts, such as Courier. To enhance your business correspondence without making it look too formal, try ITC American Typewriter, Bitstream Charter, or Stone Informal.

- To simplify mixing and matching type, build your type library with varia-

DESKTOP PUBLISHING TOOLBOX

FontSpace

If you use downloadable fonts with your LaserJet, you know how much disk space they can take up. But with Isogon's \$90 *FontSpace*, you can shrink font files by 50 to 97 percent. In one case, *FontSpace* packed 9.6MB of fonts into 430K. Better still, once *FontSpace* compresses fonts, it runs in the background and automatically expands fonts on the fly as needed. *FontSpace*

is compatible with *PrintCache*, *BackLoader*, other print utilities, and various networks.

FontSpace is an excellent, cost-effective alternative to buying a larger hard disk. —R. J.

FontSpace \$89.95; Isogon Corp., 330 Seventh Ave., New York, NY 10001; 800/662-6036 (orders only), 212/967-2424, 212/967-3198 (fax)
Reader service no. 610

tions in the same typeface *family*. This approach works well for documents like catalogs, data sheets, and heavily enumerated reports. A typeface family in-

cludes several character widths (such as condensed, expanded, ultra expanded) and weights (light, medium, heavy) for a given typeface.

- Using a single typeface family can add a dignified look to a report or proposal. Pick Palatino or ITC Galliard, for instance, and use bold and bold italic for display text, normal (“roman”) for body text, and italic for emphasis.

- To add a dynamic look to a newsletter or brochure, use contrasting typefaces from different families. For example, use a sans serif typeface like ITC Avant Garde for heads, with serif body text faces such as ITC Bookman or Palatino (see TABLE 1).

- Don't use more than two or three different typeface families on a page. For example, use one typeface for display text, one for body text, and the third for an occasional item, like a logo.

Finally, study how the pros combine and use typefaces. Two good reference books are *Type From the Desktop* (Ventana Press, Chapel Hill, North Carolina, 1990) and *Using Type Right* (North Light Books, Cincinnati, 1988). ☸

PC World contributing editor Richard Jantz is the author of *Ventura for Windows 3.0* (John Wiley & Sons, New York, 1990).

TABLE 1

Mixing Type Effectively

Wondering which typefaces work together best? Start with these suggestions when designing newsletters, reports, brochures, and fliers.

Headline Typefaces	Text Typefaces	Applications
Bitstream Charter Bold	Bitstream Charter	Business correspondence, reports
Futura Bold	ITC New Baskerville	Newsletters, brochures, magazines
Helvetica Black	ITC Garamond	Newsletters, brochures, books, magazines, fliers
Helvetica Bold	Times Roman	Any document; a safe but common choice
ITC Avant Garde Gothic	ITC Lubalin Graph	Business reports, presentations
ITC Franklin Gothic Heavy	Century Old Style	Newsletters, brochures, fliers
ITC Franklin Gothic Heavy	ITC Galliard	Newsletters, brochures, fliers
ITC Lubalin Graph Bold	Helvetica Condensed	Presentations, brochures, fliers
Palatino Bold	Helvetica	Business reports, newsletters
Palatino Bold Italic	Palatino	Business reports, books
Stone Informal Bold	Stone Informal	Business correspondence, reports
Stone Sans Bold	Stone Serif	Newsletters, manuals, business reports
Univers Bold 65	Lucida Roman	Forms, schedules

Introducing Twice The OCR At Half The Price.

SEE US AT
SET/BOLD
BOOTH #2302

Unbeatable OCR at an unbeatable price.

If you didn't think you could afford the best OCR on the market, think again. Think WordScan™, Calera's revolutionary new OCR software.

Now it really makes sense to use OCR to eliminate most of the retyping you do every day. Because WordScan's features are the best. At the best price ever.

The end of ordinary OCR.

What makes WordScan extraordinary are its standard features. Like its ability to read virtually any printed document directly into your word processor, desktop publisher, database or spreadsheet more accurately than any other OCR product. Even bad photocopies and faxes!

And WordScan Plus adds even more exclusive features.

Our unique *pop-up editor* makes proofing a snap. It pops up an enlarged image of any questionable word for instant verification, so you

don't have to refer to the original hard copy.

Deferred processing

lets you scan documents now, and perform OCR later when you don't need the computer.

You can even "clip" selected portions of pages like magazine articles, then

stack them for deferred processing. An important time-saver!

Process multiple documents into separate files automatically.

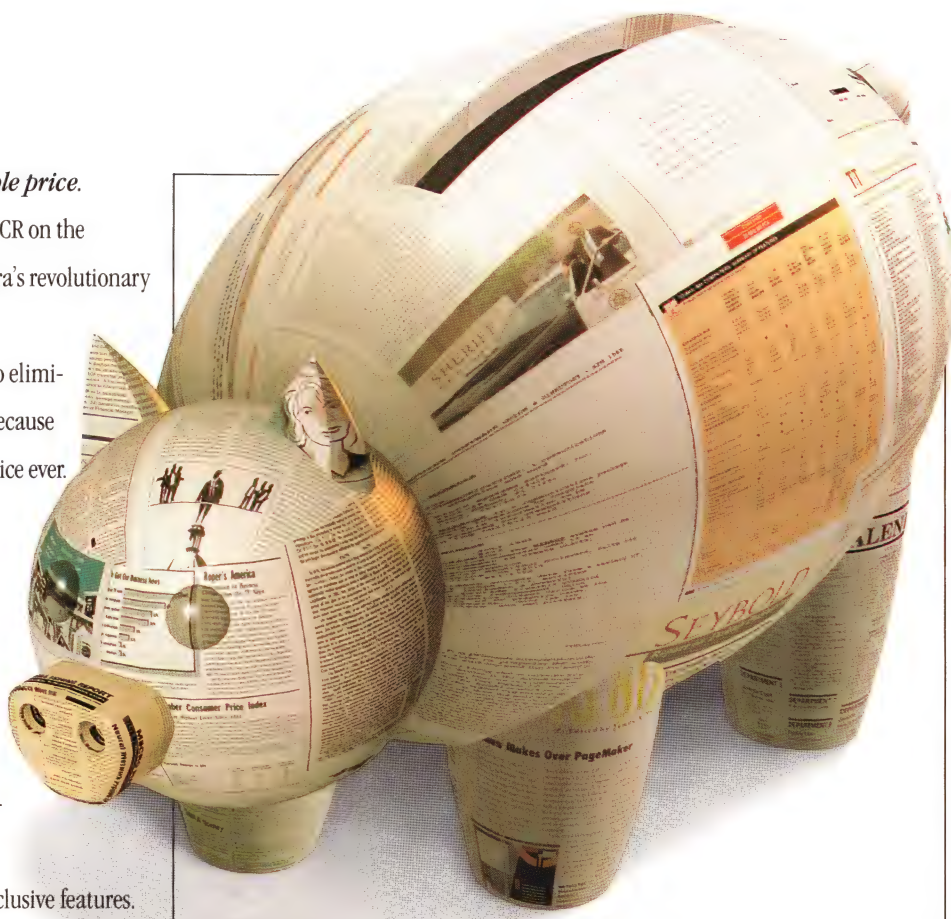
Just put a blank page between documents and WordScan does the rest.

And you can reformat material any way you want with our *style sheet feature*. Another WordScan Plus exclusive!

And the list goes on. *Nobody else can match these features.*

WordScan and WordScan Plus are completely compatible with Windows 3.0 and they do everything with just 2 MB of memory. At about half the price you'd expect to pay for OCR that doesn't do half as much.

WordScan is available now at \$595; WordScan Plus, \$995. Call 800-544-7051 for the name of the Calera dealer nearest you. And don't forget to ask for your free copy of our OCR evaluation booklet.



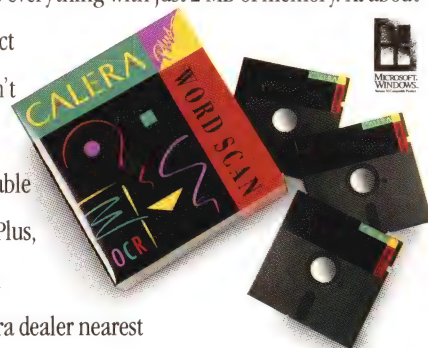
WE'LL PAY GOOD

MONEY FOR BAD OCR.

FOR A LIMITED TIME, TRADE IN YOUR
OLD OCR AND GET HALF OFF THE PRICE
OF WORDSCAN OR WORDSCAN PLUS!
30-DAY, MONEY-BACK GUARANTEE.

CALL 800-544-7051

FOR DETAILS.



CALERA
RECOGNITION SYSTEMS

2500 Augustine Drive, Santa Clara, CA 95054 USA. 800-544-7051; outside USA, 408-986-8006; FAX 408-986-1440

© 1990 Calera Recognition Systems, Inc. Calera® is a registered trademark of Calera Recognition Systems, Inc. WordScan and TrueScan are trademarks of Calera Recognition Systems, Inc.

Circle 42 on reader service card



256 Color Graphics Doesn't Have To Cost A Lot.

Make child's play out of high resolution color graphics with Trident's new TVGA 8916 series VGA boards. With 256 colors in all high resolution modes, faster graphics processing speed, and a flicker-free monitor refresh rate, an 8916 board can help make anybody look good.

More Colorful Hi Res Drivers

Of the 45 boards listed in PC World's (May 1990) Buyers Guide on Super-VGA Boards, only Trident's 8916-8 gives you 256 colors in 1024 x 768 resolution for Windows 3.0, Presentation Manager, AutoCAD, Ventura, and GEM. We also support



most of your other favorite applications, some great new rookies, and 8514/A emulation.

Fastest in its Class

And when it comes to speed, we don't kid around.

According to PC Magazine (the 8916)... "was about 20% faster than all other direct-access boards in both Microsoft Windows and AutoCAD tests." Our unique sequencer directs traffic between video memory and the system processor for faster screen updates without costly video RAM. The 8916's built-in cache memory, 32-bit memory bus, non-interlaced or interlaced modes, and 72Hz refresh rate deliver a flicker-free display while maintaining the

high speed CPU expressway.

To find out more reasons why the 8916 should be your choice in a VGA graphics board, visit your local dealer for a complete test drive.

The Trident 8916

Series. The new leader in high end PC/XT/AT and PS-2 Model 30 color graphics at a remarkably low end price.



Trident Microsystems, Inc.
321 Soquel Way, Sunnyvale, CA 94086.
Tel: 408.738.3194; Fax 408.738.0905

The Ultimate...

Screen Capture and Print Software

You know how much time you spend in the creation of perfect graphic images. Ones that display your views, ideas, and creativity. Well, don't stop at the screen. *Pizazz Plus* will take your screen based images and print them anywhere and anyway you want, as well as create files directly compatible with any popular desktop publisher. With *Pizazz Plus*, you can capture the entire screen or isolate a section. Adjust size, proportion, rotation, or placement on the page. You will see more detail and texture in your B&W prints

Pizazz Plus Compatible Hardware

Computers: IBM PS/2, PC, XT, AT, or compatible

Display Adapters: IBM VGA, MCGA, EGA, CGA, 8514A and others

Extended VGA Display Adapters:

Video Seven FastWrite VGA and V-RAM VGA

Image Capture Boards: AT&T

TARGA 16/24/32 and ICB, ATronics PIB and PIB+, Vision Technologies

Vision 16 EV-680

Printers: *Pizazz Plus* supports over 300 different printer models from the following manufacturers:

Adobe Systems, ACER, Alps, AMT, Anadex, Apple, AST, AT&T, Brother, C. Itoh, CalComp, Canon, Centronics, CIE, Dataproducts, DEC, Diablo, Diconix, Epson, Genicom, Hewlett Packard, IBM, IDS, Infoscrite, JDL, Kyocera, Laser Connection, Mannesmann Tally, NEC, Newbury Data, Oasys, Okidata, Panasonic, Printronix, QMS, Quadram, Qume, Seikosha, Sharp, Star Micronics, Tandy, Tektronics, TI, Toshiba, Transtar, Unisys, Xerox, Wang

Call for additional information including a complete list of supported hardware.

and desktop publishing files with up to 256 shades of gray. For color printers, your prints will come to life with a rainbow of print shades and options.

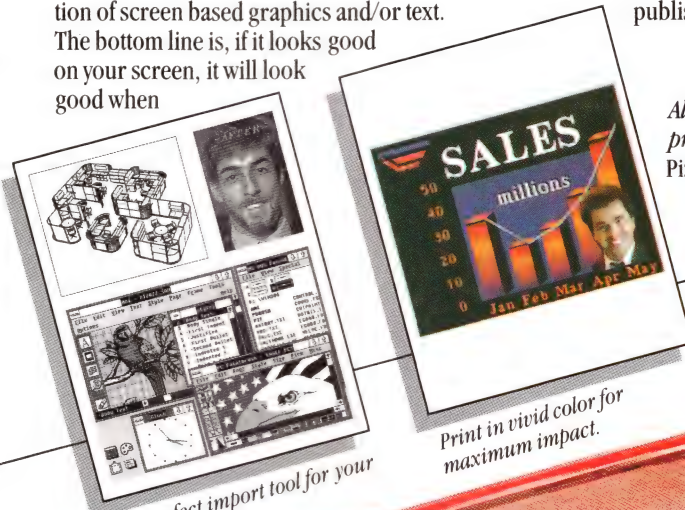
What you see is just the beginning. Since the introduction of *Pizazz* (PC World "Software Hits of 87"), it has been without question the best tool available for the reproduction of screen based graphics and/or text.

The bottom line is, if it looks good on your screen, it will look good when

printed or merged into your report, brochure, or presentation. *Pizazz Plus* doesn't just print images, it pushes your printer to its maximum capability to produce a masterpiece. And, it's memory resident—your image is never more than a keystroke away from professional printing or importing into your desktop publisher.

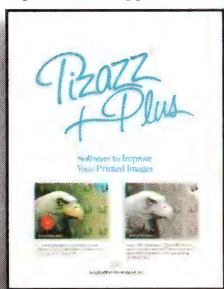


All images were produced with Pizazz Plus.



The perfect import tool for your desktop publisher.

Print in vivid color for maximum impact.



Only \$149.00, plus \$5.00 shipping and handling.

ORDER TOLL FREE! 1-800/433-5201

For sales support, or in MA, call 508/433-5201

Memory resident program takes as little as 32K. All manufacturer's names or product names are registered trademarks of their respective manufacturer. Screen images courtesy of AT&T and Facet, Inc.



Application Techniques, Inc.
10 Lomar Park Drive, Pepperell, MA 01463
508-433-5201 FAX 508-433-8466

© 1989 Application Techniques, Inc.

Circle 6 on reader service card



If you're thinking about utilities, consider the utilities that do the thinking for you.

The Norton Utilities® 5.0 is more than just a powerful new version of a classic, award-winning bestseller.

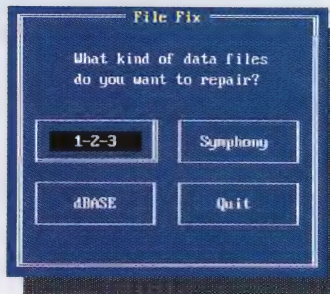
It's the best thing to happen to PC utilities since we invented them in the first place.

That's because the people who brought you the legendary *UnErase*® and the revolutionary *Norton Disk Doctor*® have cooked up another remarkable innovation.

Intelligence.

It's built in to each and every one of the 20 utilities in this package.

Which means that each and every



The new Norton Utilities corrects problems other programs can't even detect. File Fix, for example, fully reconstructs damaged 1-2-3, Symphony® and dBase files.

person who uses a PC—yes, even out-right novices—can use the Norton Utilities to perform a variety of sophisticated support tasks.

Without the aid of a sophisticated support person.

Whether you want to maximize your PC's performance, minimize the chances of data loss and disk failure, or just get yourself out of a jam, you need to get yourself the new Norton Utilities.

Having the Utilities on your disk—or on your network—is like having Peter Norton at your elbow.

In fact, our enhanced user interface includes a unique new feature that works with you just the way Peter would.

Advise not only helps you identify your particular problem, it also recommends the appropriate course of action and executes the appropriate utility.

Automatically.

If the problem happens to be a corrupted hard disk, you'll see right away why the *Norton Disk Doctor II* is the most sophisticated utility of its kind in the world.

Disk Doctor II finds and fixes problems other programs can't even detect. Yet it's simple enough for beginners to use.

The same goes for *File Fix*™, an invaluable new tool that delves into the complex internal structure of your Lotus® 1-2-3®, dBase® and compatible spreadsheets and databases to make repairs that would stymie even a skilled technician.

UnErase performs data searches automatically and shows you a list of all the deleted files on your disk. So all you have to do is point and shoot.

It also does something no other program can do: recover deleted files from anywhere on your network.

If all of that sounds like reason

enough to join the army of happy Norton Utilities users, it is.

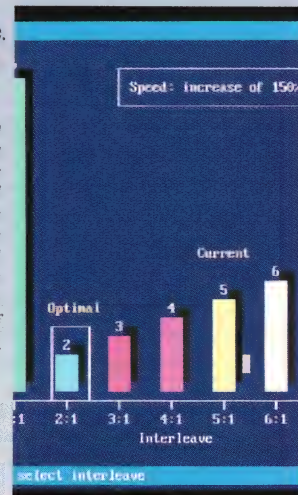
And we haven't even told you about the feature those users have most often requested.

Calibrate™ analyzes and adjusts the "interleave" of your hard disk, optimizing the read/write speed and dramatically

improving performance.

Of course, when it

Our new Calibrate utility revitalizes demagnetized disk areas and uses a low-level formatter to adjust your disk when the heads go out of alignment.



comes to improving performance, there's nothing quite like *Speed Disk*™

It not only offers four different optimization methods, it figures out exactly how fragmented your disk has become and tells you which method to use.

Nobody has to tell you how serious it is when the power goes out. So you'll be glad to know that *Calibrate*, *Speed Disk* and *Disk Doctor II* are designed with a unique failsafe architecture.

If you lose power during a procedure, you won't lose your data.

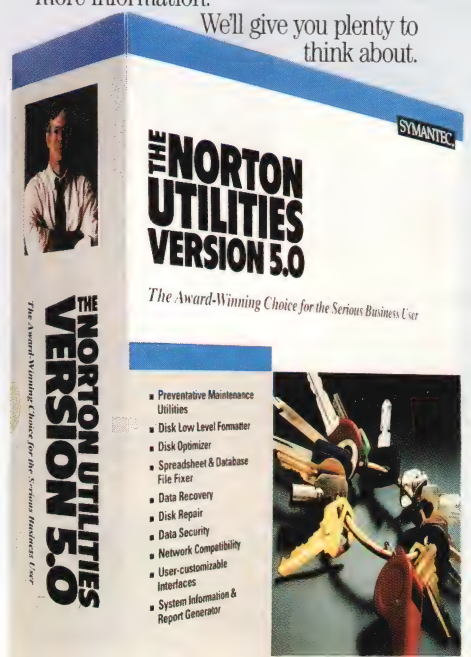
So don't lose another minute. Call 1-800-343-4714 Ext. 702W and demand

more information.

We'll give you plenty to think about.

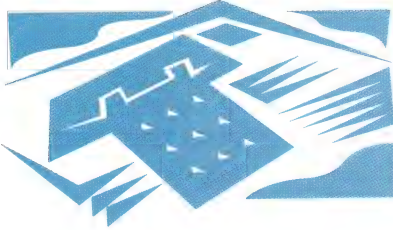
The new Norton Utilities 5.0 from Symantec

Circle 203 on reader service card



BUY VERSION 5.0 NOW
AND GET A NORTON BACKUP
FREE!
(See package for details.)

The Information Edge



Communications

On-line resources for business and professional users

This month: Scope out special-interest newsletters with NewsNet, and simplify stock analysis with MetaStock.

Judy Heim

Special-interest newsletters are often the first places important news about a given industry turns up—but there are thousands of them, and keeping an eye on more than a few can be costly. For nearly a decade, NewsNet has offered on-line access to the world's largest collection of newsletters, with special emphasis on high-tech industries ranging from biotechnology to semiconductors.

NewsNet users can search the full text of the data base for keywords. In addition, a feature called NewsFlash offers instant access to breaking news by monitoring incoming wires and newsletters 24 hours a day and culling stories on topics of users' choosing.

NewsNet is not cheap, but its users (who are typically corporate librarians,

industry analysts, and executives for well-heeled companies) need timely information and can afford to pay top dollar for it. Furthermore, while some of NewsNet's newsletters can be found in other on-line libraries like Dialog's PTS, NewsNet boasts over 400 newsletters while PTS offers only 100-plus. And at least 30 percent of NewsNet's data is available nowhere else on line.

NewsNet also includes 11 major international wire services, including Reuters, AP DataStream Business News, Japan's Kyodo Press Ticker Service, the U.S. Department of Commerce's Commerce Business Daily, and Com-Line Japan Daily, a brand-new service that covers developments in Japan's high-tech industries.

Using NewsNet is as simple as skipping stones. After you type **search**, NewsNet prompts you to enter codes for news sources to search, publication dates, and keywords to look for. (These codes are listed in a NewsNet handbook.) NewsNet then searches the full text of the data base. If it finds any matches ("hits"), it sends you a list of headlines. At this juncture, you can choose to skim a summary of an article, or you can elect to read the entire story.

Monitoring current newsletters via NewsFlash works the same way. Once you set search criteria, every time you log on, NewsNet tells you if you have any hits waiting.

NewsNet's fatal flaw is its eye-popping price. The annual subscription fee is \$120, and connection costs run as high as \$750 an hour (depending on the bps rate and the surcharge for the news

NewsNet accesses breaking news instantly and culls stories by topic.

source read). There's also a 50-cent charge for each hit delivered from NewsFlash. In comparison, Dialog's PTS charges a flat \$136 an hour, plus a yearly \$35 subscription fee.

Obviously, if you *must* have on-line access to a newsletter that's available only on NewsNet, the expense will be justified. Moreover, NewsNet's huge collection of marketing and high-tech newsletters and wire services is undeniably seductive, as is its ease of use

THE ON-LINE TOOLBOX

Y-Plug

Are your on-line sessions disrupted when someone picks up the extension phone in the next room? The Message Stopper from Jasco Products will save your bacon. Simply snap this souped-up Y-plug into the phone jack in the next room. Then, as long as your modem or phone is

conducting a call, the Message Stopper disables the extension. When your modem hangs up, the extension phone is reenabled. This essential gadget retails for around \$14 at Target, Montgomery Ward, and Shopko stores, among others. —J. H.

THE PROFESSIONAL EDGE

Analyzing Stock Prices the Easy Way

Joel Tepp

It wasn't long ago when the only easy source of stock quotes was the evening paper, and even simple analysis required hours with a pencil and pad. Now quotes can be downloaded from dial-up data bases like Dow Jones News/Retrieval and analyzed with a number of software packages. Some packages popular with brokers, like *Computrac*, cost thousands of dollars; others are less expensive but lack the power for complex analysis.

Equis International's *MetaStock Professional 2.0* bridges the gap between power and affordability. For only \$349 it offers just about all the basic mathematical tools an investor needs for technical stock analysis (manipulating market variables of price, volume, and time). The newest version includes stunning charts and graphics, breakneck computation thanks to math coprocessor support, and the ability (new in this version) to save charts and settings so you can easily recall them for your next session.

First you download market quotes from one of the dial-up services like Dow or Warner Computer Systems, using your own communications software, and save the data. *MetaStock* uses the industry-standard *Computrac* file format, but it can import and convert a number of others, including 1-2-3's WKS and WK1, ASCII, and DIF.

MetaStock's opening screen then lists all the stocks in your

data base and their date ranges. With a few keystrokes, you can turn that data into revealing graphs and charts that make it easy to perform a technical analysis of the relationships between stock prices and various indicators or oscillators in the financial marketplace.

You can use up to 36 windows for charted data; unfortunately, you can't exchange data between them. You can also access technical tools, like formulas for relative strength and standard deviation, via easy-to-use drop-down menus.

The program includes 63 mathematical formulas for calculating custom buy-and-sell signals, and you (or your financial advisor) can custom design up to 60 more. Once you have matched an indicator (or combination of indicators) to a series of prices, be they stocks or futures, *MetaStock* lets you create and test hypothetical rules for buying and selling. A report will show the resulting profit or loss.

MetaStock's profit analysis capabilities are less powerful than those in pricier programs like *System Writer*; and it lacks some of the esoteric charting routines found in *Computrac*. But its low price and easy interface put the essentials of complex stock analysis at the service of investment novice and pro alike.

MetaStock Professional 2.0, Equis Int'l, P.O. Box 26743, Salt Lake City, UT 84126; 800/882-3040, 801/974-5115, 801/974-5130 (fax)
Reader service no. 663

(especially compared to Dialog's notoriously nasty interface). Nonetheless, given its high price, we recommend making sure the news sources you need aren't available elsewhere, for less, before signing up. ☎

Judy Heim is a contributing editor for PC World, and Joel Tepp is a broker with Bateman Eichler, Hill Richards in Seattle, Washington.

WHERE TO BUY

NewsNet

Independent Publications
945 Haverford Rd.
Bryn Mawr, PA 19010
800/345-1301, 215/527-8030
Reader service no. 662

POWER TIP NO. 139

Protecting System Files From Accidental Deletion

You're working in an application directory on your hard disk with a job running longer than expected. So you decide to make room on a recycled floppy to copy files and finish the project at home. You type `dir a:` and see that you no longer need the data on the floppy disk, but then you type `del *.*`, and when DOS asks 'Are you sure (Y/N)?', you answer 'Y', erasing all the files in your application directory!

Protect yourself from this type of accident by using the DOS command `attrib +r *.*` to make all files in your applications directory read-only. You can unprotect individual files that require regular updating (personal dictionaries and so on) by typing `attrib -r filename`.

Rex Farrance
Assistant Editor

HIGHLY RECOMMENDED

When *Accounting Today* (May 1990) asked accountants which accounting software package they recommended to their small business clients, an overwhelming 29% said they recommend Peachtree's General Ledger—that's almost double the next largest competitor.

Reseller Management (March 14, 1990) asked resellers which accounting package they recommend and Peachtree came out on top again with 25% of resellers recommending it.

But accountants and resellers aren't the only ones giving Peachtree rave reviews:

"If you could find a definition for Peachtree in the dictionary, it might be 'value for your money.'"—PC Magazine 4/10/90

"It is, I believe, the best accounting package available for the price."—E.J. Bosmeny, CPA, Naperville, IL

"Complete III rivals packages costing 10 times as much."—PC Resource, July 1990

If there's one thing people agree on, it's what a great value Peachtree's Double Bonus Bundle is. That's because it includes two first-rate software packages for one low price—Peachtree Complete III, a full-featured accounting system, and Peachtree Data Query III, a reporting and analysis tool.

Peachtree Complete III includes nine high-powered modules to meet all your business accounting needs.

- General Ledger
- Accounts Payable
- Accounts Receivable
- Payroll
- Inventory
- Invoicing
- Purchase Order
- Fixed Assets
- Job Cost

Peachtree Data Query III gives you custom access to the vital accounting data in your Peachtree Complete III files. Choose from PDQ's predefined reports, customize your own reports (and store the formats for future use), even export data to popular applications like Lotus 1-2-3® and dBASE®, with no risk to your files, and no re-keying of data.

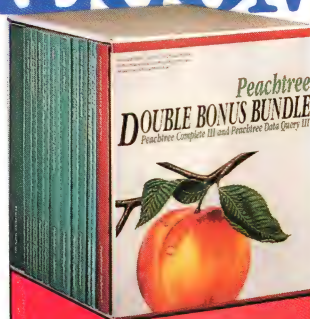
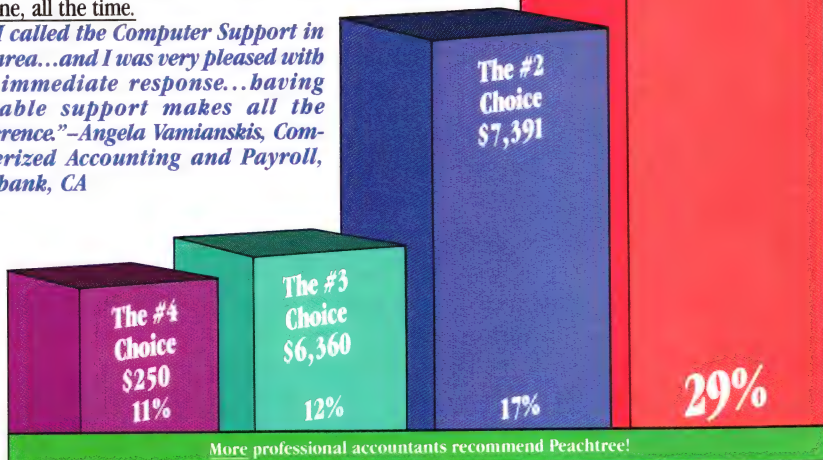
And, Peachtree is the one accounting system you won't outgrow. Install the functions your company needs now and add modules, departments or even companies to the system as your business grows.

"...It is, beyond a shadow of a doubt, the best, easiest to use, most helpful program I've ever had to review."—C. McQuaid, McQuaid & Holland, Inc., Accountants, Geneva, AL

"Installation is easy, data entry is fast...a joy to use."—PC Resource, July 1990

With Peachtree, you don't have to give up ease of use to get the power and performance you need. The Double Bonus Bundle comes with on-line tutorials for each module and thorough documentation—an *Accounting Primer*, a quick-start installation Guide, and a complete reference library—so you can get up and running quickly. Errors are handled with plain English messages and suggestions. Context-sensitive HELP is on-line, all the time.

"I called the Computer Support in my area...and I was very pleased with the immediate response...having reliable support makes all the difference."—Angela Vamianskis, Computerized Accounting and Payroll, Burbank, CA



Peachtree Accounting

THE #1 CHOICE

Only \$298

29%

At Peachtree, we make technical support convenient for you with Authorized Support Centers in over 60 cities across the country and directly from Peachtree (support charges based on the length of the call on your credit card). And we stand behind our products with a 30-day money-back guarantee when you buy directly from Peachtree. If for any reason you're not satisfied, just return the package within 30 days for a prompt refund (less a \$25 restocking fee).

"...It's the only application I recommend. The package is superb..."—Marc Barlow, Executive Vice President, AdMedia, Largo, FL

Order Peachtree's Double Bonus Bundle NOW! Find out what over 350,000 satisfied Peachtree users already know—why so many people highly recommend Peachtree.

Features

General Ledger

- Unlimited accounts
- Comparative financial statements—present or back to 2 years
- Prior period adjustments

Accounts Payable

- Partial payment of invoices
- Prints checks
- Prints miscellaneous 1099's

Accounts Receivable & Invoicing

- Maintains open item or balance forward customers
- Unlimited transactional detail
- "Ship to" address file

Purchase Orders

- Updates purchase orders and inventory
- Generate A/P invoices from purchase order

Job Cost

- Tracks profitability on a job-by-job basis

Payroll

- Unlimited number of employees
- Accrues sick and vacation time
- Prints checks, W-2's calculates Federal and State payroll taxes

Inventory

- Supports LIFO, FIFO, Specific Unit, standard and average costing methods
- Unlimited inventory items
- Serial number tracking

Fixed Assets

- Handles 13,000 assets and 13 methods of depreciation

PDQ III

- Modify pre-defined reports
- Create your own reports
- Present data in line or bar graphs
- Transfer information to dBASE III® and Lotus 1-2-3®

Hardware Specifications. Requires PC/MS-DOS version 3.0 or higher with 640K of memory and a hard disk. For use with IBM PC, PC XT, PC AT, Personal System/2 and compatibles 3½" media optionally available. Not copy protected.

Lotus 1-2-3 is a registered trademark of Lotus Development Corporation. dBASE is a registered trademark of Ashton-Tate Corporation. IBM is a registered trademark and Personal System/2 is a trademark of International Business Machines.



Peachtree Software

Call Now To Order

or for the name of the dealer near you.

1-800-247-3224

or, 1-404-564-5800

To order by fax 1-404-564-5888

add \$12.50 shipping to fax and mail orders*
(In Georgia, add applicable sales tax.)

*Telephone number required on all orders

1505 Pavilion Place, Norcross, Georgia 30093

PCW

For a limited time, the B and A in BASF stand for Bon Appetit.



A good appetite will come in handy with BASF's "Wine and Dine" Game. Because every time you buy BASF diskettes, you could win prizes you can really sink your teeth into.



You could be one of the Grand Prize winners who'll enjoy an all-expenses-paid trip for two to the restaurant of your choice, anywhere in the U.S. It includes all transportation, meals and hotel for 6 nights. Or one of the thousands of 2nd Prize winners who'll dine in style with an American Express "Be My Guest" Restaurant Certificate worth \$100.00. There's even a second-chance drawing for a 3-day, 2-night mini-vacation. Look for game tickets in specially marked packages.

At BASF, we believe in satisfying your appetite. For the best in data protection. And the best in exquisite dining. Offer for limited time only. Call your BASF dealer today.

Try it. Depend on it.  **BASF**

BYE, BYE PARADISE ... HERE COMES PLATINUMS SuperCache™ VGA BOARD!

**VARS
WANTED**



COMPARE 10 CRITICAL SPECS!

	PARADISE VGA 1024	PLATINUM VGA SuperCache™	BENEFIT TO YOU
1. 4KB x 25ns CACHE MEMORY	NO	YES	ALOT FASTER
2. SCREEN REFRESH	INTERLACE	BOTH INTERLACE AND NON-INTERLACE	FUTURE EXPANSION
3. ON BOARD MEMORY	TO 512K	TO 1024K	MORE COLOR ^s
4. COLORS IN 1024x768	16	256	READY FOR WINDOWS 3.0
5. ALWAYS FLICKER FREE	NO	YES	LESS EYE STRAIN AND HEADACHES
6. DIP SWITCHES	YES	NO	EASIER AUTOMATIC SETUP
7. DIRECT ACCESS SPEED TEST	1.71 SEC.	1.04 SEC.	1.6X FASTER
8. BIOS TTY SPEED TEST WITHOUT SCROLLING	0.66 SEC.	0.39 SEC.	1.7X FASTER
9. BIOS TTY SPEED TEST WITH SCROLLING	1.38 SEC.	1.04 SEC.	1.3X FASTER
10. WARRANTY	3 YEARS	3 YEARS	INSURANCE AGAINST FAILURE

Tests Performed in accordance with PC Magazine Lab Benchmark Series with both units having 512K of memory.



Are you planning to upgrade your system to VGA? Then consider PLATINUMS exciting new VGA SuperCache™ video card. It has all the features to solve your immediate needs plus giving you built-in higher resolution enhancements to grow with like adding Windows 3.0 in the future.

It Gives You:

- (A) 100% IBM Compatibility
- (B) Extended graphics resolution to 1024 x 768 in 16 and 256 colors
- (C) Both Interlaced and non-interlaced Modes
- (D) Up to 1 MB of on-board socketed memory
- (E) 8 and 16 Bit modes to allow installation in almost any PC
- (F) Software drivers and documentation for the most current version of popular programs i.e. Windows 3.0, Wordperfect 5.1, and Lotus 1 2 3
- (G) And a flicker free operation in all modes, essential for todays high resolution monitors

There's plenty more, also.

Who's PLATINUM you say? They've delivered over 1,000,000 video cards to private label companies and OEM's in the past few years and now they're selling direct to you.

PLATINUM Products, PLATINUM Support, PLATINUM Quality ... Don't you need this guarantee with your next purchase?

ACT acknowledges and gives credit to the above registered trademarks. © 1990, ACT CORP.



YES!

**PLEASE RUSH ME A
PLATINUM VGA SuperCache™
BOARD TODAY!**

QTY	PRODUCT	EACH	TOTAL
_____ X	NEC 3D MONITOR	\$625	_____
_____ X	SuperCache™/ 256K	\$199	_____
_____ X	SuperCache™/ 512K	\$229	_____
_____ X	SuperCache™/ 1024K	\$289	_____
_____ X	SHIPPING AND HANDLING AT \$5 / BOARD, \$30 / MONITOR		_____
		SUB TOTAL	_____
		CA RESIDENTS ADD 6.75%	_____
		TOTAL	_____

☐ VISA ☐ MC ☐ AE ☐ Cashiers Check ☐ Personal Check Allow 2 Weeks

CARD NO _____ EXP. DATE _____

SIGNATURE _____ TEL _____

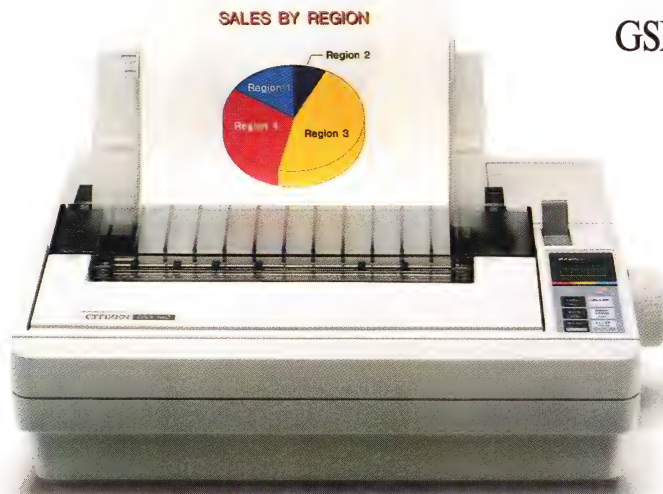
SEND TO: **ACT CORP.**
809 S. LEMON AVE.
WALNUT, CA 91789

FOR PHONE ORDER:
714-869-7789
FAX: 714-869-7980

An Authorized Platinum Distributor • Three Year Limited Warranty,
30 Days Money Back Guarantee

Circle 9 on reader service card

Award Winning Performance.



GSX-140

Encore!



200GX

When you want a color printer that creates the right impression, there's only one choice: the award-winning dot-matrix line from Citizen. The 24-pin GSX-140 was judged *InfoWorld's* "Best in its Class" and "Excellent Value," and *Home Office Computing's* "Editor's Pick." With this impressive track record, it's now joined by the 9-pin 200GX.



Both the GSX-140 and 200GX feature optional **CITIZEN** Color On Command™ for brilliant seven-color printing. Both guide users with plain English prompts on their unique Command-Vue™ control panels. Add



paper handling that *Home Office Computing* called "The best we've seen," legendary Citizen workmanship backed by a 24-month warranty, list prices of \$499 for the GSX-140 and \$299 for the 200GX, and you will understand why Citizen printers are creating such good impressions.

For an authorized Citizen dealer near you, just call **1-800-556-1234, extension 34**, or in California call **1-800-441-2345, extension 34**.



©1990 Citizen America Corporation.
Citizen, Color On Command, Command-Vue and the
Citizen logo are trademarks of the Citizen Watch Co. Ltd.



Circle 91 on reader service card

User Group Tips

Helpful hints from members of the nation's user groups

MORE Automation

The DOS command `TYPE filename` does a fine job of presenting on-screen listings of short ASCII files, but long files scroll by too quickly to be read. Using the command `type filename | more` allows you to read the information a screenful at a time. Create the following batch file to cut down your keystrokes: `@echo off`

`type %1 | more`

Just make sure that `MORE.COM` is in your DOS directory and that the DOS directory is in the `PATH` statement in your `AUTOEXEC.BAT` file. Name the file `TM.BAT` or another easy-to-remember batch-file name. Then when you type `tm filename` and press `<Enter>`, DOS will present you with a screenful of text. Press `<Enter>` when you are ready to read the next screen.

*George W. Crumley, Jr.
PCShare.RCA Users Group
Merrick, New York*

Microsoft Word Columns for Easy Indents

Microsoft Word allows you to set up snaking and side-by-side columns. The Column Selection feature can also save you effort when you're working with lists. Suppose you have a list of names that you want to indent to the first tab. You could move the cursor to the beginning of each line and press `<Tab>`, but there's an easier way to set a lot of tabs at once. Select `<Esc>Options Visible: Complete (<Esc>Options Show non-printing symbols All for version 5.0)` so that you can see the space, tab, and paragraph marks. Then move the cur-

sor to the first letter of the name that begins the list. Press `<Shift>-<F6>` to turn on Column Selection. Using the mouse or the `<Cursor Down>` key, select the text down to the first letter of the last item in the list. Then press `<Tab>` once, and *Word* will insert a tab at the beginning of each line. Use the same technique to delete a column of tabs: Just turn on Column Selection, select the column of tabs, and press `<Delete>`.

You can also use Column Selection to add a new column, such as a list of department numbers, to the right of the name list. Select the entire column of

You may be fragmenting your Paradox tables.

names, and use `<Esc>Format Tab Set` to set tabs to place each column. Make sure you allow sufficient room to accommodate the longest items. Put your cursor on the paragraph mark at the end of the top line of the list. Add spaces until your cursor has moved to the right of the longest item in the list. Press `<Shift>-<F6>` to turn on Column Selection, highlight straight down to the beginning of the last line in the list, and press `<Tab>` once to insert tabs after all the items. You can now erase the spaces you inserted if you wish.

Next you'll want to position your column of department numbers. Place the cursor on the first character in the department number list, and press `<Shift>-<F6>`. Highlight down to the bottom of the list and over far enough to include the longest item. Don't worry if you highlight paragraph marks with the short items. Press `<Alt>-<F3>` if you want to copy the list or `<Delete>` if you want to move it. Then place your cursor

on the paragraph mark at the right end of the name list's top line. Press `<Insert>`, and the second column will line up with your second tab.

*Bill Weil
San Francisco PC Users Group*

Setting the Table for Better Paradox Performance

Whether you know it or not, as you delete and add records, you may be fragmenting your *Paradox* tables. Sometimes *Paradox* reuses the space from a deleted record for a new record, but sometimes it doesn't, and over time you can develop a lot of holes in your data files. These holes aren't visible when you view a table, of course, but it still takes time for *Paradox* to read across them. Cure this fragmentation with the *Modify Restructure* command. Use it to call up the table's structure. You don't have to change anything—just press `<F2>`, and *Paradox* will restructure the table and squeeze out any unused space.

In addition, most operations, such as queries and reports, are faster on smaller tables than on larger ones. Table size is a product of the number of records times the size of each record. Therefore, if you have seldom-used records or fields, consider moving them into a separate table. Of course, splitting up a table isn't worthwhile if you'll continually be using queries and other operations to join it back together again. So give careful consideration to which records it will be strategic to move.

*Brian J. Smith
Southern California Paradox
Users Group*

Are you a user group member with a tip to share? Would you like to see your name in PC World, help other users, and earn \$50 plus a PC World T-shirt in the bargain? See How to Contact PC World, page 4. ☺

Largest Variety of Templates Available And The Most Inexpensive!

At present, FuncKey Enterprises has 36 color-coded templates for 70 of the most popular PC software programs, in BOTH 10 key and 12 key versions. We are continually updating the templates so that you always get the latest version of a program, plus older versions on one template. The major software manufacturers (Borland, Ashton-Tate, SPC, Microsoft, Dac-Easy, etc.) provide us with advanced copies of new releases, so that FuncKey always has the largest selection of low-cost, current program templates. The background color ink is formulated to diffuse light and reduce glare. The thin profile (only 12/1000 of an inch thick) lets you stack several templates on the keyboard for quick changes between programs. The removable reference card shows shortcuts, speed keys, and other useful conventions. FuncKey templates are excellent training tools or handy for occasionally used programs. **Best of all, a 10 key template is only \$2.98 and a 12 key template is only \$3.98.**



Circle 80 on reader service card

For More Information Please Call Your Local Dealer Or

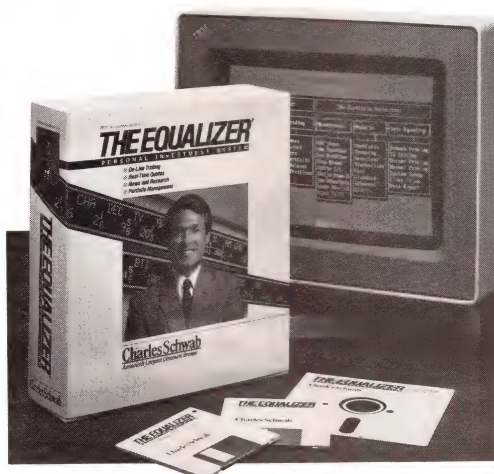
FuncKey Enterprises
(817)482-6613

MARKET MOVER

Now you can make your move in the market before the market moves on you — with The Equalizer® investment software.

The Equalizer lets you quickly trade online, get real-time quotes, check out financial news and research, see analysts' ratings and recommendations, and much more.

With The Equalizer, you have easy access to a wide range of professional investment resources, right from your personal computer. So you don't even have to move from your desk.



Find out how The Equalizer gives you more control over your investments with:

- Online trading
- 10% commission savings with every trade*
- Real-time quotes
- The latest financial news
- Account information
- In-depth research
- Easy portfolio management
- Analysts' ratings and recommendations
- Toll-free customer support

For more information, visit a Schwab branch or call:

1-800-638-5700

or send to:

Charles Schwab & Co. Inc., Investor Information Services
101 Montgomery St., Dept. S, San Francisco, CA 94104

☐ **YES**, please send me **FREE** information on
The Equalizer personal investment software.

Name: _____

Address: _____

City: _____ State/Zip: _____

Phone: Day: (____) _____ Evening: (____) _____

Only \$99

Charles Schwab
We give you more ways to succeed.

P9VAU

*This discount cannot be used in conjunction with any other Schwab discount or promotional offer.

Member, SIPC.
© 1990 Charles Schwab & Co., Inc.
All rights reserved.

Circle 29 on reader service card

Now \$4.95 Stops The Clock



Send and receive electronic mail

Learn from
our online encyclopedia



Get top news
and weather reports



Enjoy lively sports talk

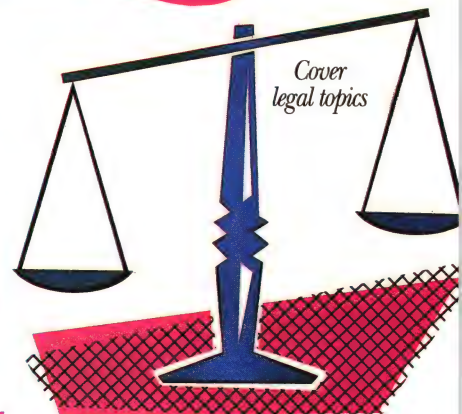
Play single
player games



Laugh at
the latest jokes



Exchange leisure time tips



Cover
legal topics

For the first time ever, enjoy unlimited non-prime time* usage of many popular GENieSM Service features. For just \$4.95 a month. Choose from over 100 valuable services including everything from electronic mail and stock closings to exciting games and bulletin boards. Nobody else gives you so much for so little.

JUST \$4.95

Moneyback guarantee

Sign up now. If you're not satisfied after using GENie for one month, we'll refund your \$4.95.

You can also enjoy access to a wide variety of features like software libraries, computer bulletin boards, multi-player games, Newsbytes, and the Computer Assisted Learning Center (CALC) for just \$6 per non-prime hour for all baud rates including 2400. That's less than half of what some other services charge. Plus with GENie

On Over 100 GENie Services.



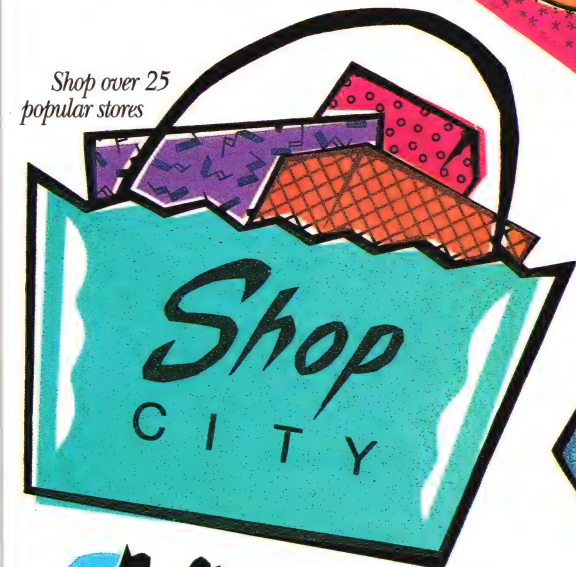
*Share science
fiction insights*



*Get pet
care tips*



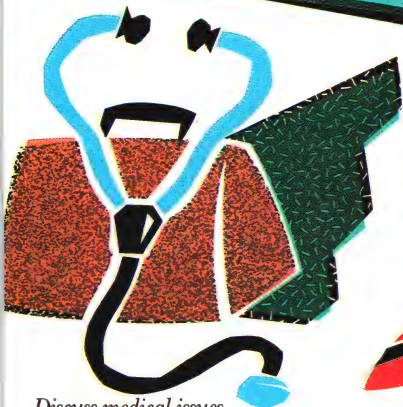
*Meet
other hobbyists*



*Shop over 25
popular stores*

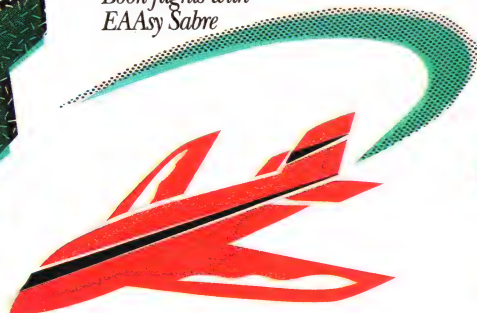


Check current stock closings



Discuss medical issues

*Book flights with
EAAy Sabre*



*Catch movie
news and reviews*

there's no sign-up fee.

Now GENie not only gives you the information and fun you're looking for. But the time to enjoy them, too.

Sign up today.

Follow these simple steps.

1. Set your modem for half duplex (local echo), at 300, 1200 or 2400 baud.

2. Dial toll free 1-800-638-8369. Upon connection, enter HHH.
3. At the U#==prompt, enter XTX99503, GENIE then press RETURN.
4. Have a major credit card or your checking account number ready.

For more information in the U.S. or Canada, call 1-800-638-9636.



We bring good things to life.

outside U.S. Prices and products listed as of Oct. 1, 1990 subject to change. Telecommunication surcharges may apply. Guarantee limited to one per customer and applies only to first month of use.

Circle 133 on reader service card

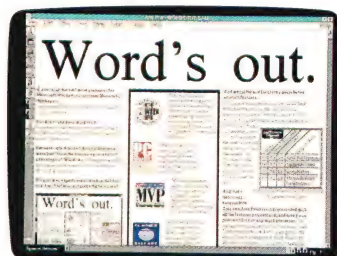
Word's out.

If you think the best word processor for Microsoft Windows comes from Microsoft, think again.

Ami Professional has set the new standard for word processing.

But don't take our word for it.

Everybody from the corporate users polled by PC Week to the editors of PC World and Software Digest says so.



They may look like desktop publishers, but Ami and Ami Professional are what word processing should have been all along. Ami is yours for just \$199, Ami Professional for \$495.

Because only Ami and Ami Professional were built from the ground up to take full advantage of Windows. Which is why they're recognized as the easiest and most intuitive of all word processors.

It's also why experts acknowledge that Ami and Ami Professional make the best use of Windows' WYSIWYG environment. Instead of relying on archaic "page previews" like Word for Windows, Ami lets you create, see, and edit all elements of your document — text, graphics, even footnotes, headers and footers — in a variety of fully editable views.

Graphics are easier to handle, too. Because Ami "frames" (which can also contain text for page-within-page formats) are true "pick up and place" objects that can be quickly and accurately positioned and sized on screen.



MICROSOFT
WINDOWS
Version 3.0 Compatible Product

Requires IBM AT, PS/2 or compatible (80286 or better CPU); CGA, EGA, VGA or Hercules compatible displays; MS-DOS 3.0 or higher. A free runtime version of Microsoft Windows 2.11 is available to all purchasers of Ami and Ami Professional.

The Demonstration Version of Ami Professional is a fully functional version of the product, except for the thesaurus, some import/export filters, and the ability to save files. The demonstration version requires Windows 2.11 or Windows 3.0.

Ami is a registered trademark of Samna Corporation. All other trademarks and copyrights are acknowledged.



PC Week Poll of Corporate Satisfaction

- Ami Professional received a score in Ease of Use of the User Interface that was fully 10 points higher than the next highest score, and came in 14 points ahead of the score WordPerfect 5.1 drew from its buyers.



July 1990
Ami Professional, Version 1.1B



PC Magazine Editor's Choice

- Of all GUI word processors, Ami Professional has the widest variety of features and is perhaps the most enjoyable to use.

PC Computing MVP

- A stunning achievement, one that no other PC word processing product — not even Microsoft's estimable Word for Windows — can claim to have reached.



PC World Best Buy

- Ami Pro's easy to use formatting tools are hard to resist. If your documents typically include graphics, it's your Best Buy.



Infoworld Excellent Value

- Easily handles graphics mixed with text, imports a host of text and graphics formats effortlessly, and does other office chores such as mail merge with ease and power.



And we get the nod for giving users better access to features. Our unique dialog boxes provide visual feedback that lets you see

the results of your choices immediately, without having to reformat the document until you know exactly how it will look.

Plus, our shortcut icons — which

eliminate the need to use pull down menus — are changeable. So you can use the ones that correspond to the functions you use the most.

And that's important because both Ami and Ami Professional are loaded with all the features you demand, and many you just can't find in any word processor. Including tables that let you perform basic math. Charts and graphs. A drawing program. Dynamic Data Exchange with other Microsoft Windows applications. And style sheets that make it easy to create sophisticated-looking documents — like this ad!

So whether you're an executive type who types only occasionally, or a heavy user who needs lots of specialized features, one of these programs is definitely your type. Even the experts agree.

When it comes to word processing, Ami is the first and last word.

Call 1-800-831-9679 to order your full feature demonstration version for just \$9.95.

SAMNA
WORD PROCESSING

Rating	Overall Evaluation	Overall Power	Program Name
★★★★	7.9	6.9	Ami Professional
★★★★	7.7	7.7	Microsoft Word
★★★★	7.6	8.1	Word Perfect
★★★★	7.2	6.7	Microsoft Word for Windows

Software Digest rates Ami Professional as the best word processor for Windows and the best word processor overall.





STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Make WordPerfect perform like a chip off the old block, create a 1-2-3 macro for cursoring without cursor movement keys, stop a runaway print job, learn how one user solves "The COMSPEC Caper" on a Novell network, and discover a choice TSR programming tool.

Edited by Tom Swan

WordPerfect Block Party

With three simple macros [see **FIGURE 1**], I was able to imitate a non-PC editor's block commands that I was familiar with, making *WordPerfect 5.0* perform like a chip off the old block. The macros let me use simple key combinations to move, delete, or copy text blocks—much easier than using *WordPerfect's* function keys.

After creating the macros, load or enter a sample document and highlight a block of text. To delete the block, press

<Alt>-D. To move it, press **<Alt>-D**, move the cursor to the desired location, and press **<Alt>-R**. To copy it, highlight the block, press **<Alt>-C**, then move the cursor to the new location and press **<Alt>-R** to insert a copy.

Retrieving a deleted or copied text block doesn't erase the copy in memory; you can press **<Alt>-R** as often as you like to duplicate text passages.

*Ginger Booth
Dallas, Texas*

Editor's note: To create the macros, start with an empty document, type at least three letters, and position the cursor on the first letter. Doing so just gives the macro commands some marked text to digest—you don't have to save the document.

The delete-block macro will work only if Block (<Alt>-<F4>) is on. If you press <Alt>-D while Block is off, you'll get a "Please wait" message that will remain until you press <F1>. If you feel comfortable with WordPerfect's macro editor, you can make this macro foolproof by putting the command {if}{state}&128~ at the beginning of the macro and {end if} at the end.

Cursorless Data Entry

Since my keyboard lacks a separate numeric keypad (a typical setup on many portables), when entering data in 1-2-3 I have to either press <Num Lock> constantly, forgo keypad entry, or give up using the cursor keys. Luckily, a sim-

```
<Alt>-<F4>
<Cursor Right>
<Ctrl>-<F10>
<Alt>-D
Delete block<Enter>
<Ctrl>-<F4>bm
<F1>
<Ctrl>-<F10>
<Ctrl>-<F10>
<Alt>-R
Retrieve block<Enter>
<Shift>-<F10>
<Enter>
<Ctrl>-<F10>
<Alt>-<F4>
<Cursor Right>
<Ctrl>-<F10>
<Alt>-C
Copy block<Enter>
<Ctrl>-<F4>bc
<F1>
<Ctrl>-<F10>
```

FIGURE 1: Enter these keystrokes to create macros that can delete, move, copy, and retrieve WordPerfect 5.0 text blocks.

ple macro [see **FIGURE 2**] gives me the best of both worlds: Keypad entry plus the ability to move to the next cell down without having to switch keyboard modes.

Enter the macro text at an out-of-the-way location, and name the first line \C using the command *Range Name Create*. To run the macro, move the cursor to the first cell where you want to enter values, press **<Alt>-C**, type your first cell of data, and press **<Enter>**. The cur-
(continues)

```
{?}~
{if @upper(@cellpointer("contents"))="STOP"}/re~/xq~
{d}{branch \c}
```

FIGURE 2: This 1-2-3 macro enables you to enter a column of data without using the cursor keys.

sor then moves down to the next cell. When you've finished entering data, type **stop** and press **<Enter>**.

To create another macro that moves the cursor horizontally, copy the macro to another range, change the '{d}' in line 3 to '{r}', and name this range **\R**.

Vivek Wig

Moreno Valley, California

Somebody, Stop That Printer!

To abort print jobs or reset printer op-

tions to their default settings, I wrote a short utility, **RESET.COM**. To create the program, save the script in **FIGURE 3** as a plain ASCII file named **RESET.DAT**. Press **<Enter>** to create the blank line before 'rex'. Then, from the DOS prompt, and with **DEBUG.COM** in a directory in the current **PATH**, type **debug reset.dat** and press **<Enter>**.

When you run the program, it calls the system's ROM BIOS routine number 17 hexadecimal—the same function

that DOS calls when it boots to initialize the parallel printer ports.

Charles N. Jackson III

Silver Spring, Maryland

Editor's note: I modified Mr. Jackson's program to reset LPT1 and LPT2, which does no harm even if you have only one port. If you want only LPT1 reset, remove the three lines from 'inc dx' through 'int 17' and change 'f' to 'b'. (continues)

DEVELOPER'S TOOLBOX

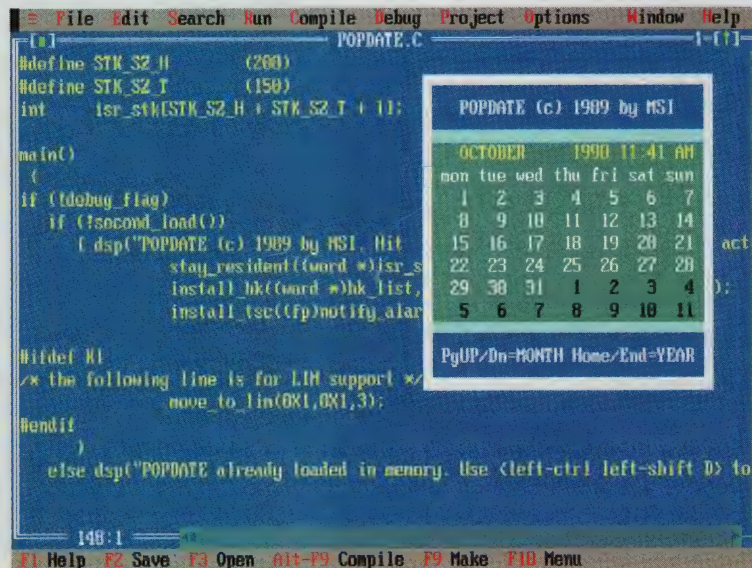
Saucy TSR Tools

Programming TSRs is a gutsy job. If you don't have the stomach for unappetizing tasks like monitoring keyboard interrupts, avoiding reentrant calls to DOS and the BIOS, and meeting other requirements that complicate resident pop-ups, you'd be wise to assign the programming to an expert TSR chef.

At least that was my thinking until I tried **CodeRunner** from Microsystems Software. This interesting tool kit skillfully handles typical TSR duties such as trapping function hot keys and scheduling events—tasks that are generally run in the background. **CodeRunner** lets you do all this with **Turbo C** or **Microsoft C**, and the results are nearly as fat free as those from crack assembly language programmers. Best of all, you don't have to be trained in TSR haute cuisine to start cooking resident code.

CodeRunner trims and speeds TSRs written in C (you can also use assembly language) by replacing standard run-time libraries with slim object-code modules. Unlike standard C run-time code, these modules add only the routines that an application requires.

Also provided are custom start-up routines specially written for TSRs. The **ASM** source files for these modules are on disk, so you can fine-tune the instructions if necessary.



A sample TSR calendar written in C with **CodeRunner**, displayed over the program's own source code in the **Turbo C++ 1.0** editor.

These and other refinements produce small **EXE** files—an important goal in TSR programming. But even more critical is what happens when the TSR loads into RAM. Typically, after installing its resident portion, the TSR's memory segments contain wasteful gaps formerly occupied by once-and-done functions and data—a routine to display a copyright notice, for example.

CodeRunner recycles that kind of reuse in three ways. First, it lets you mark

code and data for disposal. After loading the TSR, disposable space is recovered for DOS's use. This includes RAM occupied by your own code and by library routines called only by the TSR's loader—a clever scheme that minimizes memory consumption.

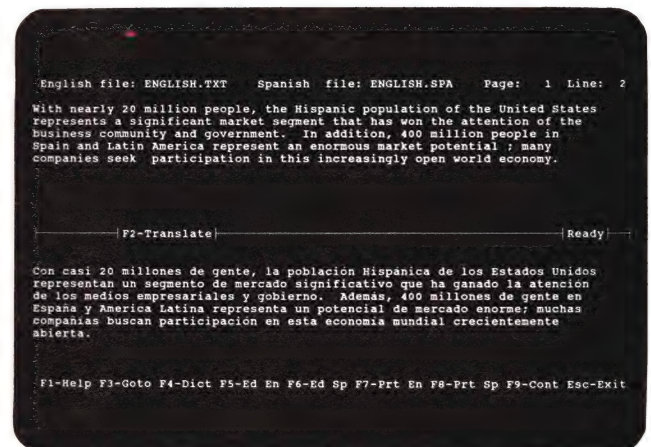
Second, after the TSR's installation routines are finished, **CodeRunner** overlays the program's data segment to that same RAM space. This puts the poten-

HOW TO
MAKE
YOURSELF
UNDERSTOOD
IN A LANGUAGE
YOU DON'T
UNDERSTAND.

¿Habla usted español? No, you don't speak Spanish?

Then, Translate is made to order for you. It's an enormously useful tool for anyone who has to communicate in writing with America's fast-growing Spanish-speaking population.

With this revolutionary software program, you simply input your English text. Seconds later, you get a precise unadorned Spanish translation. Nuances of language, stylistic preferences, corporate jargon, and specific terminology can be easily implemented through the dictionary update function.



Translate utilizes an 85,000 term English-to-Spanish dictionary. Finalsoft's User Support Service will assist you in customizing the dictionary.

Other programs of this kind cost thousands of dollars; Translate is only \$495.00 That's a terrific value in any language.

Call toll free: 1-800-232-8228.

In Florida: (305) 477-2703, 9-6 EST.

FAX: (305) 477-0680. Visa and MC accepted.

30-day money-back guarantee on direct orders.

Add \$5.00 shipping and handling. Florida residents add 6% Sales Tax. Free user support.

Dealer inquiries welcomed. Finalsoft Corporation, 3900 N.W. 79th Ave., Suite 215, Miami, FL 33166.

"The advantages of Translate are many. This program handles translation of complete phrases — unlike other programs that function word by word.... Besides being easy to use and fast to learn, it works!"

—Winston Roberts
PCM Magazine

Translate
Breaking the language barrier.

A product of **FINALsoft**

See us at
COMDEX/Fall '90
November 12-16, 1990
Las Vegas, Nevada
Booth # 4582

System requirements: IBM® XT® /AT®, PS/2® or compatible (8 Mhz. or higher recommended), DOS 3.0 or higher, hard disk, and 512K RAM.
© Copyright 1990 Finalsoft Corporation. All rights reserved. Finalsoft is a registered trademark of Finalsoft Corporation.
IBM, XT and PS/2 are registered trademarks of International Business Machine Corporation.

Circle 84 on reader service card

PC WORLD GIVES YOU A WINNING HAND!



Tired of flipping through
user manuals?

Can't *find* the user manual?

Need lightning-quick access to
key commands and features?

Need a software reference you
can take anywhere?

PC WORLD'S NEW INSTANT REFERENCE CARD IS YOUR BEST BET.

This monthly pullout card gives you a full house of tips on using essential applications. One side provides basic commands that get you started; side two raises the stakes, with advanced pointers to help experienced users squeeze every bit of productivity out of their software and hardware investment.

LOOK FOR THESE INSTANT REFERENCE CARDS:

WordPerfect
Microsoft Word
Windows 3.0
Procomm Plus
Ventura Publisher
Paradox
Excel
PageMaker
1-2-3
DOS
CompuServe
...and more!

 **AccountMate**[®]



Exploding the Myth of "One Size Fits All" Accounting Software.

Do you process Accounts Receivable exactly the way other businesses do? Manage inventory the same way? Generate identical reports?

Of course not. Which is why our accounting software, AccountMate,[®] lets you tailor its functions to fit your business perfectly.

Ready to Use, Ready to Change You may buy one or all of AccountMate's 15 modules—including General Ledger, Accounts Receivable and Payroll—and use them as they are.

In time, however, your business will change and grow. AccountMate lets you add new screens, generate customized reports, or put your "stamp" on an invoice.

With modifiable AccountMate, you'll:

- **Save Money** You don't pay the price of new or wholly customized software as you grow.
- **Save Time** Because you can "block out" features you don't use and add ones you need, you eliminate unnecessary screens and keystrokes.
- **Gain Control** Whenever your business grows, AccountMate can grow with you!

Don't get hemmed in by "one size fits all" accounting software. Join the ranks of 50,000 plus AccountMate users. Call SourceMate for the authorized AccountMate reseller nearest you. Ask about our free Introductory Disk: 1-800-877-8896. International: 415-381-1011. Fax: 415-381-6902.

SourceMate

20 Sunnyside Ave./Mill Valley/CA 94941-1928

*AccountMate is available in MS DOS, LAN, single or multi-user formats.

```
a
mov ah,1
push ax
xor dx,dx
int 17
inc dx
pop ax
int 17
mov ah,4c
int 21

rcx
f
n reset.com
w
q
```

FIGURE 3: This DEBUG script creates RESET.COM, which stops runaway print jobs and resets your printer to its defaults.

RESET should work with most network printing schemes. If you have a serial printer attached to your computer's RS-232 ports, you can't use RESET.

The COMSPEC Caper

On our Novell network, I use a custom log-in script to set the COMSPEC environment variable. The script tells DOS to reload COMMAND.COM from a network directory instead of from a user's disk, which allows users who don't have hard disks to switch floppies after booting. The problem was posed by Constantine Heger in "Floppy-Based Workstations" [*The Help Screen*, June 1990].

The method described in that item can be automated by placing the command **COMSPEC = %x:COMMAND.COM** into your log-in script, where *x* is the search drive number. The network administrator can place the command in a system log-in script to do this systemwide.

Richard Kinney

Kennewick, Washington

Tom Swan is a contributing editor for PC World and the author of Mastering Turbo Debugger and Mastering Turbo Pascal 5.5 (Howard W. Sams and Co., Carmel, Indiana, 1990 and 1989).

Share your tips and discoveries with PC World readers; see How to Contact PC World, page 4. ■

Circle 258 on reader service card

BASICS: MICROSOFT WORD 4.0 AND 5.0

MOVING THE CURSOR

What to do: After you load a document, use these keyboard or mouse techniques to move the cursor around. Mouse users can usually move the mouse pointer and click the left or right or both mouse buttons; for some mouse operations, you must point at the scroll bar on the left window border and click the appropriate button(s). The mouse pointer's shape or color may change depending on its location.

Move cursor	Keyboard commands	Mouse pointer position/Button click
One character or line	Cursor keys	Desired position/Left
To start of line	<Home>	Start of line/Left
To end of line	<End>	End of line/Left
Down one screen	<Page Down>	Bottom of scroll bar/Right
Up one screen	<Page Up>	Bottom of scroll bar/Left
To start of previous paragraph	<Ctrl>-<Cursor Up>	Desired position/Left
To start of next paragraph	<Ctrl>-<Cursor Down>	Desired position/Left
To previous word	<Ctrl>-<Cursor Left>	Previous word/Left
To next word	<Ctrl>-<Cursor Right>	Next word/Left

MOVING THE CURSOR (continued)

To top of window	<Ctrl>-<Home>	Desired position/Left
To bottom of window	<Ctrl>-<End>	Desired position/Left
To start of document	<Ctrl>-<Page Up>	Top of scroll bar/Both
To end of document	<Ctrl>-<Page Down>	Bottom of scroll bar/Both

Note: If you use the mouse to scroll through text or to jump to the start or end of a document, you must place the pointer in the text and click the left mouse button if you want to type or edit text. If you don't, the screen will jump back to the original cursor position.

SELECTING TEXT

What to do: Word is easiest to use if you enter text, select it, and then edit or format it. Selected text appears reversed on screen. **Note:** In some cases, mouse users must place the pointer in Word's selection bar—the blank column to the left of text—and click adjacent to the desired text block.

SELECTING TEXT (continued)

Select	Keyboard commands	Mouse pointer position/Button click
Characters	<Shift>-cursor key	Current character/Left and drag
Previous word	<F7>	Previous word/Right
Next word	<F8>	Next word/Right
Previous sentence	<Shift>-<F7>	Within sentence/Both
Next sentence	<Shift>-<F8>	Within sentence/Both
Current line	<Shift>-<F9>	Selection bar/Left
To beginning of line	<Shift>-<Home>	Current character/Left and drag
To end of line	<Shift>-<End>	Current character/Left and drag
Previous paragraph	<F9>	Selection bar/Right
Next paragraph	<F10>	Selection bar/Right
To end of document	<Shift>-<Ctrl>-<Page Down>	Current character/Left and drag to bottom border
Entire document	<Shift>-<F10>	Selection bar/Both
Column	<Shift>-<F6>, cursor keys to define column	Desired position/Left, <Shift>-<F6>/Left and drag to define column

Tip: To extend a selection, press <F6>, then use the keyboard or mouse action above. Mouse users can press <F6>, point at the last character, and click any button to extend the selection. Press <F6> again to stop extending.

EDITING TEXT—KEYBOARD

What to do: Once you select a block of text, you can move it, delete it, temporarily stash it in Word's Scrap area, or change its formatting. You can also save selected text as a glossary entry for use in any document. **Note:** Text in *italics* represents variable information you should supply.

EDITING TEXT—KEYBOARD (continued)

Action	Keyboard commands
Delete to Scrap	<Delete>
Delete permanently	<Shift>-<Delete>
Paste Scrap contents into document	<Insert>
Replace current selected text with Scrap contents	<Shift>-<Insert>
Copy text to glossary	<Esc>C, <i>glossary name</i> , <Enter>
Insert text from glossary	<i>glossary name</i> , <F3>
Save glossary	<Esc>TGS, <i>file name</i> , <Enter>

Tip: Text stored in the Scrap remains there until you delete more text or exit Word. You can insert Scrap text anywhere, including into another window or document.

EDITING TEXT—MOUSE

What to do: Most editing is done from the keyboard, but mouse users can quickly move and copy text without moving it to Word's Scrap. The steps: Select the text first, move the mouse pointer to the position described below, and issue the proper keystroke-mouse button combination.

To place selected text in front of:	Point at:	To copy (keystroke-button):	To move (keystroke-button):
A character	The character	<Shift>-Left	<Ctrl>-Left
A word	The word	<Shift>-Right	<Ctrl>-Right
A sentence	The sentence	<Shift>-Both	<Ctrl>-Both
A line	Selection bar beside line	<Shift>-Left	<Ctrl>-Left
A paragraph	Selection bar beside paragraph	<Shift>-Right	<Ctrl>-Right
Beginning of the document	Anywhere on selection bar	<Shift>-Both	<Ctrl>-Both

ADVANCED: MICROSOFT WORD 4.0 AND 5.0

FORMATTING TEXT

What to do: Once you select text, you can format it with a number of shortcut keys. Remember: Select text first, then format it. No mouse shortcuts exist for these commands, but you may use the mouse with the Format Char-

acter menu.

Select font from list

Select font size from list

<Alt>-<F8>, <F1>
select font, <Enter>
<Alt>-<F8>, <Tab><F1>,
select size, <Enter>

Boldface

<Alt>-B

Italics

<Alt>-I

Underline

<Alt>-U

Double underline

<Alt>-D

Small caps

<Alt>-K

Strikethrough

<Alt>-S

Superscript

<Alt>-<=>

Subscript

<Alt>-<->

Hidden text

<Alt>-E

Remove all character formatting

<Alt>-<Space>

FORMATTING TEXT (continued)

Tip: To format a single character under the cursor, hold down the <Alt> key and press the appropriate letter twice.

Mouse tip: To copy a character format, select the text to be formatted, move the mouse pointer to a character with the desired format, hold down <Alt>, and click the left mouse button.

Note: You can also issue a formatting command, then type. All characters typed will be in the chosen format until you change it with another command.

FORMATTING PARAGRAPHS

What to do: These commands act on the paragraph containing the cursor or on multiple paragraphs that have been selected. No mouse shortcuts exist for these commands, but you can select the commands in the Format Paragraph menu. **Note:** A paragraph is any text followed by a carriage return.

Center <Alt>-C
Flush left <Alt>-L
Flush right <Alt>-R
Justify <Alt>-J
Double-space <Alt>-2

FORMATTING PARAGRAPHS (continued)

Single-space (Word 5.0 only)

<Alt>-1

Single-space

<Esc>FP<Cursor Down>
<Cursor Down> 1 <Enter>

Add space above

<Alt>-O

Increase left margin

<Alt>-N

Decrease left margin

<Alt>-M

Increase both margins (Word 5.0 only)

<Alt>-Q

Indent first line

<Alt>-F

Hanging indent

<Alt>-T

Remove paragraph formatting

<Alt>-P

Mouse tip: To copy a paragraph format, select the text to be formatted, move the mouse pointer to the selection bar next to a preformatted paragraph, hold down the <Alt> key, and click the right mouse button.

QUICK KEYSTROKE OPERATIONS

Action Keyboard commands

Load file from list

<Ctrl>-<F7>, select file,
<Enter>

Save file

<Ctrl>-<F10>

Undo last command or edit

<Shift>-<F1>

Repeat a search

<Shift>-<F4>

Get help

<Alt>-H

Check spelling

<Alt>-<F6>

Use thesaurus

<Ctrl>-<F6>

Switch display modes

<Alt>-<F9>

Print preview (Word 5.0 only)

<Ctrl>-<F9>

Print file

<Ctrl>-<F8>

Mouse tip: Mouse users can get help by clicking on the question mark at the

bottom of the screen.

Note: You must have two or more windows open to use the zoom function. **Note:** You can't resize the right-most window or a window at the bottom of the screen.

Action	Keyboard commands	Mouse pointer position/button click
Open vertical window	<Esc>WSV, column number, <Enter>	Top border/Left
Open horizontal window	<Esc>WSH, line number, <Enter>	Right border/Left
Open empty window	<Esc>WSH, line number, <Tab>Y <Enter>	Top or right border/Right
Move cursor from window to window	<F1>	Desired window/Left
Zoom a window	Place cursor in window, <Ctrl>-<F1>	Window number/Right
Switch zoomed windows	<F1>	Window number/Left
Unzoom a window	<Ctrl>-<F1>	Window number/Right
Close window	<Esc>WC, window number, <Enter>	Top or right border/Both
Resize window	<Esc>WM, window number, <Tab>, row number, <Tab>, column number, <Enter>	Lower right corner/Left and drag along border

WINDOW OPERATIONS

What to do: You can use the keyboard or mouse to create, zoom, or remove windows. Load Word and follow the steps below. You can load different documents into any given window; Word displays up to eight windows at a time. **Note:** Since using the mouse for these operations requires Word's borders, press <Esc>O, then <Tab> to the Screen Borders field (Show Borders in Word 5.0), type Y, and press <Enter>.

Action Keyboard commands Mouse pointer position/button click

Fold Here

Fold Here

ACCOUNTING SOFTWARE NEWS

First Edition

An M-USA Publication

Dallas, Texas

Yes, It's True!

Pacioli 2000™ Accounting Software Gives You Everything You Need For Only \$49⁹⁵

"... the equal of other high end accounting programs in every way but cost."

New York Times, July 1, 1990

The reviews are in and Pacioli 2000 has surpassed all expectations. Whether you are already using accounting software or you are ready to buy an accounting software package, please read on.

Pacioli 2000 is the hottest new accounting software on the market. Designed by J. M. Hurtado, the man who started the accounting software revolution in 1985 with DacEasy™ Accounting, it is the FIRST full-featured, network-ready accounting software for only \$49.95. Pacioli 2000 gives you everything you need while saving you hundreds, even thousands of dollars over other software.

**Full-featured Accounting
with 8 Modules Fully
Integrated into One System**

**Easy to Install, Easy
to Learn, Easy to Use**

**Network Ready
with No Additional Fees**

**Free Unlimited
Customer Support**

**2 Hour Instructional
Videotape**

**90 Day Money-Back
Guarantee**

But you don't have to take our word for it. Listen to the experts.

"... may well put its competition on the endangered species list."

Reseller Management, July 1990

With all its power, pull-down menus, full mouse support and context-sensitive help, Pacioli 2000 is as easy to use as a checkwriter. You get examples, guides



and suggestions, an automatic installation routine, and a file inquiry system that lets you make inquiries or create accounts "on the fly".

Pacioli 2000 integrates all 8 accounting modules into one powerful system—General Ledger, Accounts Receivable, Accounts Payable, Inventory Control (including true FIFO and LIFO), Billing, Purchasing, Budgeting and Auditing. Learn one and you've learned them all.

"... a full-featured package that adds the extra element of network support."

Computer Reseller News, April 23, 1990

The system is fully networkable, which means one user or any number of users can enjoy the same easy-to-use, powerful features with no additional user fees. It is ready to perform as multi-user accounting software that includes multi-level password protection, file and record locking, transparent user management and more.

Also included is Free Unlimited Customer Support. If you have any questions while using Pacioli 2000, the

answers are as close as your telephone. Call us and we will be happy to help you. No charges. No service contracts. Just straight answers when you need them.

Pacioli 2000 is backed by a 90 day money-back guarantee when purchased directly from us. If you are not satisfied, simply return the entire package and we will refund your purchase price (less shipping charges) with no questions asked.

We truly believe Pacioli 2000 is the accounting software for today and for the future. The critics obviously feel the same way, and we think you'll agree after you try it. Then you'll know that it's true!

For more information call 1-214-931-2033

**TO ORDER CALL
1-800-345-4243**

Ask for operator 232 or mail the coupon below.

Yes! Please send me _____ copies of Pacioli 2000 plus the FREE Video Tutor for only \$49.95 each (Add \$7.50 shipping and handling. Texas Residents add 8.25% sales tax).

Name _____

Address _____

City _____

State _____ Zip _____

Phone No. (____) _____

Company Name _____

Amount Enclosed _____

Payment Method (Check One) No CODs please:

☐ Check ☐ Visa ☐ MC ☐ AmEx

Account # _____

Expires _____

Signature _____

Make Check Payable To and Mail To:

18111 Preston Rd., Suite 500
Dallas, Texas, 75252

Minimum Hardware Requirements: IBM or compatible computer with 640Kb, hard disk, monochrome or color monitor, mouse optional, MS-DOS 2.1 or later for single users (3.1 or later for networks), 132 column dot matrix printer in compressed mode.

© Copyright 1990, M-USA Business Systems, Inc. Pacioli 2000 is a trademark of M-USA Business Systems, Inc. All others are trademarks or registered trademarks of their respective manufacturers.

Circle 7 on reader service card

DEVELOPER'S TOOLBOX

(continued)

tially wasted RAM back into service.

Third, *CodeRunneR* relocates the far heap—the pool of memory where pointers address variables created at run time. To use this feature, you must create a function that updates far-pointer segment addresses. At run time, the function receives a relocation value, which your code can use to aim pointers back at their moving targets. This is every bit as tricky as it sounds, but the memory savings should more than offset the extra programming required.

To help you get started with TSR programming, *CodeRunneR* comes with sample source code. There are two clock programs, two calculators, a pop-up calendar, and a keyboard scan-code

window that shows key values. These programs can't compete with similar commercial utilities, but they make good templates for your own work. Also provided are custom start-up routines specially written for TSRs.

I have only one complaint with *CodeRunneR*: You have to register the product to receive extra sample programs and an improved math library. Even though these items are free, you'll probably have to wait several days for them to arrive. On a positive note, the company promises to make these files available for downloading from its BBS at no charge. You still have to pay any long-distance tolls, but even so, I sure wish other companies would adopt comparable policies.

If you're looking for the TSR tool that's the cream of the crop, try *CodeRunneR*. It's got all the ingredients C programmers need to bake four-star RAM-resident treats.

Let's talk it over. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. —Tom Swan

WHERE TO BUY

CodeRunneR

Microsystems Software, Inc.
600 Worcester Rd.
Framingham, MA 01701
508/626-8511, 508/626-8515 (fax)
LIST PRICE: \$149
TECHNICAL SUPPORT: toll number,
M-F 8:30–5:30
OTHER SUPPORT: company BBS for
registered users
Reader service no. 730



Creative Financing Couldn't Be Easier

Imagine getting answers to loan amortization or financial questions without having to be a computer or financial expert. *Amortizer Plus* is the product that thousands of people are already using to solve both simple and complex investment scenarios.

Easy To Use, Yet Powerful

Amortizer Plus offers the simplicity of pull-down menus, context-sensitive help, and easy to follow screens – you can even use a mouse if you wish. Plus, it handles comprehensive financial analysis.

Loan Schedules In Seconds

Calculating and comparing different loan options couldn't be easier or quicker. *Amortizer Plus* handles all the loan types you'll need, including fixed rate, variable rate, fixed payment to principal, skipped payments, and wrap loans. Select compounding intervals different than payment intervals, simple interest, fiscal or calendar years and much more. Your options are endless!

Comprehensive Financial Analysis

Amortizer Plus is ideal for simple and complex financial analysis. You can easily calculate APR, determine a note's yield if sold or repaid early, and analyze simple leases. You can also analyze the value of any security (CDs, annuities, stocks, bonds, etc.) with compounding and varying rates of return, and periodic deposits and withdrawals. Whatever you want to do, *Amortizer Plus* can do it.

Amortizer Plus is the best choice for loan calculations and financial analysis.

Call today and take charge of your business and personal finances. You can purchase *Amortizer Plus* from your local Egghead Discount Software, Software Etc., or Soft Warehouse store or other fine dealers nationwide.

1-800-272-4663

Suggested retail price: \$99.95

© Copyright 1990 Good Software Corporation

GoodSoftware
CORPORATION

Circle 111 on reader service card

PC WORLD

TAKING CARE OF BUSINESS THE PC WORLD SUBSCRIBER HOTLINE

Do you have a subscription problem that needs attention? Are you moving?

Have an address change? Do you need to check your expiration date?

For the fastest service simply call our toll-free subscriber hotline: 1-800-234-3498 between the hours of 6:00 AM and 8:00 PM, Mountain Time.

Or if you prefer, write us at:

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PC WORLD

The flood has arrived. May we interest you in an ark?



You are currently the target of thousands of pieces of information a day. So we'll get straight to the point.

You can sit by and find yourself inundated by all that. Or you can choose the perfect vessel to navigate it: Dow Jones News/Retrieval®.

We're the only computer-based information service specifically designed to meet the needs of people in business and finance.

And given the business world's obsession with wanting everything yesterday, we attach special urgency to speed. Within seconds, we bring developments from across the country and around the world to your computer. Thoroughly researched news

of companies, industries, government actions, and markets—including detailed data and current stock quotes on thousands of companies.

We're also the only information service that offers the full text of *The Wall Street Journal*® and Dow Jones® News Services—which can't get you what you need yesterday, but certainly gives you a head start on tomorrow.

But business decisions often require a perspective broader than the present alone. So we also provide hundreds of other rich information sources: periodicals, surveys, statistical abstracts—information on practically everything from acquisitions to Zurich gold fixings.

The result is an entire, up-to-the-second business reference library shrunk to the size of a personal computer. One that gives you in seconds what might otherwise take months to acquire. And lets you manage that information instead of having the information manage you.

So the next time you feel yourself drowning, reach for that life preserver on your desk with all the buttons on it. And call Dow Jones News/Retrieval at 1-800-225-3170, Ext. 725.

DOW JONES
NEWS/RETRIEVAL®
The lifeblood of business.™

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

■ Accessory Boards	287
■ Bios Chip	287
■ Cables	287
■ CD ROM	287-288
■ Communications/Modems	288
■ Computer Rental	288
■ Computer/Systems	288-289
■ Disk Drives	289
■ Expansion Units	289
■ Insurance	290
■ Memory Boards	290
■ Memory Chips	290
■ Peripherals	290-291
■ Security	291
■ Tandy Peripherals	291
■ Tape Back-Ups	291

■ Home Use	300
■ Inventory Control/Management	300
■ Languages	301
■ Laser Fonts	301
■ Laser Logos & Signatures	301
■ Mailing List Programs	301
■ Maintenance Management	301
■ Manufacturing	301
■ Medical	301
■ Music	301-302
■ Networking	302
■ Public Domain/Shareware	302-303
■ Project Management	303
■ Real Estate	303
■ Restaurant Management	303
■ Security	303
■ Statistics	303-304
■ Surveys	304
■ Taxes	304
■ Utilities	304
■ Windows	304

MISCELLANEOUS

■ Accessories	291-292
■ Bar Coding	292-293
■ Business Opportunities	293
■ Catalogs	293-294
■ Computer Insurance	294
■ Data/Disk Conversion	294
■ Disk Copy Service	294
■ Disks	294
■ Services	295
■ Supplies	295

ADVERTISING SALES STAFF

Sandra Wade - *Catalog Manager*
Elizabeth Maffly - *Catalog Coordinator*

Place Your Ad Today Call: 800.435.7766
In CA. 800.435.7760; Int'l: 415.243.0500

ADVERTISING RATES&INFORMATION

SOFTWARE

■ Accounting	295-296
■ Accounting Forms	296
■ Business Applications	296
■ Church Applications	297
■ Construction	297
■ Data Base	297
■ Data Entry	297
■ Desktop Publishing	298
■ Educational	298
■ Engineering	298
■ Entertainment/Games	298-299
■ Financial	299
■ Flow Charting	299
■ Genealogy	300
■ Graphics	300
■ Health	300

The *PC World Catalog* serves as a cost-effective monthly meeting place for advertisers and volume purchasers. Our readers don't want to shop, they want to buy! And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of \$475 per issue for a total of \$1,425. You supply copy. We set type.

For further information regarding the *Catalog*, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World
501 Second Street
San Francisco, CA 94107

 PCW Communications, Inc.
An IDG Communications Publication

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

HARDWARE/ Accessory Boards

PC WORLD

TAKING CARE
OF BUSINESS

THE PC WORLD
SUBSCRIBER
HOTLINE



Do you have a subscription problem that needs attention? Are you moving? Have an address change? Do you need to check your expiration date?

For the fastest service simply call our toll-free subscriber hotline: **1-800-234-3498** between the hours of 6 AM and 8 PM, Mountain Time. Or if you prefer, write us at:

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PC WORLD

BLAST YOUR MESSAGE THRU POWER LINE

VOICE MAIL CALL PROCESSING TELEMARKETING

Let Powerline transform your PC/XT/AT/386 into a multi-line voice processing command center. Have your computer intelligently process your sales, inquiries and messages. Complete package.

Single Line (Bigmouth) . . . \$295.00
Multi-Line \$895.00

(Developer/OEM packages available)
VISA • MC • AMEX • COD

Call: (415) 522-3800
FAX: (415) 522-5556

TALKING TECHNOLOGY, INC.
1125 ATLANTIC AVENUE, ALAMEDA, CA 94501

© 1990 TALKING TECHNOLOGY, INC.

CIRCLE 521 ON READER SERVICE CARD

Bios Chip

AWARD BIOS ROM UPGRADES

Upgrade your IBM XT, AT or Compatible with a new AWARD BIOS ROM. Add high density floppies, 101 keyboards, etc. Call for FREE Catalog.

KOMPUTERWERK
851 Parkview Blvd.
Pittsburgh, PA 15215
Orders (800) 423-3400
Tech. (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

**BUY WITH
CONFIDENCE!**

CATALOG

ROM BIOS UPGRADES

Complete Upgrades For Your IBM or Compatible

FEATURES

The new ROM BIOS UPGRADES will give your computer support for 360K, 720K, 1.2MB and 1.44MB floppy drives; EGA & VGA support; NOVELL and NETWARE compatible; support for 48 different hard drive types plus two user defined; 84, 101 & 102 key keyboard support; built-in diagnostics in ROM; complete set-up in ROM; 100% IBM compatible; supports 0, 1 or 2 wait states; full OS/2 support; complete documentation; latest versions.

*The XT BIOS upgrades require a high-density controller card for 1.44 or 1.2MB floppy drive.

XT BIOS UPGRADES

PHOENIX-XT BIOS	49.95
AMI-XT BIOS	49.95
PATERSON-XT TURBO BIOS	49.95

AT 286 BIOS UPGRADES

PHOENIX-286 BIOS	59.95
PHOENIX-286 AST BIOS	59.95
PHOENIX-286 IDS BIOS	59.95
AMI-286 C&T BIOS	59.95
AMI-286 VLSI BIOS	59.95
AMI-286 SUNTAC BIOS	59.95

IBM BIOS UPGRADES

PHOENIX-IBM PC BIOS	69.95
PHOENIX-IBM XT BIOS	49.95
PHOENIX-IBM AT 286 BIOS	69.95

AT 386 BIOS UPGRADES

PHOENIX-386 BIOS	59.95
PHOENIX-386 C&T BIOS	59.95
PHOENIX-386 SX BIOS	59.95
AMI-386 BIOS	59.95
AMI-386 C&T BIOS	59.95
AMI-386 SX BIOS	59.95
AMI-386 COMPAQ BIOS	59.95

IBM PS/2 BIOS UPGRADES

AMI-PS/2 MODEL 30 BIOS	59.95
AMI-PS/2 MODEL 50 BIOS	59.95
AMI-PS/2 MODEL 80 BIOS	59.95

UPGRADES, ETC.

(800) 541-1943

15822 NE 165th Street
Woodinville, WA 98072
FAX (206) 881-8294
VISA • MC • COD

• 2 Year Warranty • Free Catalog
• 45-Day Money-Back Guarantee • P.O. is Are Welcome
• Volume Discounts • We Ship UPS & Federal Express
• Free Technical Support • Add \$5 for Shipping
• Welcome • OEM'S — VAR'S • Factory Authorized

CIRCLE 560 ON READER SERVICE CARD

Cables

COMPANION

Add an Extra Keyboard and Monitor to your CPU up to 600 ft. away.

- IBM PC, XT, AT, PS/2 and 100% Compatibles
- Available for MDA, CGA, EGA (TTL) and VGA (Analog) Monitors

- 25, 50, 100, 150, 200, 250 ft. lengths
- No external power required

- Lengths up to 600 ft. available by Special Order
- Multiple Monitor Configurations available
- Prices start at \$219.

CYBEX CORPORATION
2800 H. Bob Wallace Avenue
Huntsville, AL 35805
(205) 534-0011

CIRCLE 469 ON READER SERVICE CARD

CD Rom

CD-ROM



U.S. History CD-ROM Special

100 U.S. History books including 1,000 images, tables & maps on one CD-ROM disc, an indispensable resource!
U.S. History on CD-ROM disc \$395
Complete CD-ROM drive kit bundled with U.S. History (Save \$200) 895

CD-ROM Drives

NEC CDR-35 w/ audio PC (\$549) or Mac 499
Hitachi Drive with audio for PC 699

CD-ROM Titles

Between Heaven & Hell practical/perverse 99
Exotica-ROM exotic adult art by Olivia 189
Microsoft Bookshelf writers reference 199
McGraw-Hill Ref. set 100,000 terms 245
Grollier's Encyclopedia 20 vol. PC & Mac 289
Countries of the World over 100 study books 295
NEC Type Gallery full Adobe type library 319
Programmer's Library 20,000 pages on-line 369

MORE! Over 200 different titles

FREE subscription to CD-ROM End User Money back guarantee Free tech support Call: Bureau On-Line CD-ROM Library, Free access to 12 different CD-ROM discs Guaranteed Lowest Prices



Bureau of

Electronic Publishing, Inc.

Dept. A • 141 New Road, Parsippany, NJ 07054
Fax # 201-808-2676

Call: **1-800-828-4766** orders only
201-808-2700 information

CIRCLE 540 ON READER SERVICE CARD

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

CD Rom

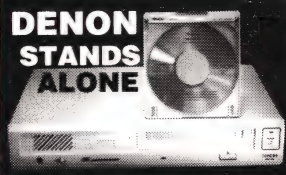
EXOTICA • ROM

Over 100 pictures of breathtaking beauty. The **Exotica • ROM** is the first IBM & Mac CD-ROM dedicated to a single artist's work. This electronic gallery features exotic art painted by the world-famous artist Olivia, scanned in brilliant color and grayscale.

Olivia's works are exhibited in galleries around the world and have been featured on the T.V. series *Beauty and the Beast*.

#1-1397 only \$199

DENON STANDS ALONE



Denon CD-ROM drive complete for IBM PC/AT/XT. One year warranty. Comes with caddy, interface cable & card. Features: speaker with volume control & input/output jacks.

#1-1317 \$699 (reg. \$1100)

Part #	Title	Price
1-1333	Grolier Encyclopedia	\$299
1-1334	Prof. Photo. Collection	\$129
1-1324	Comstock Photo. vol. 1	\$299
1-1355	Microsoft Bookshelf	\$189
1-1321	CD Caddy (Sony comp.)	\$12.95



SAVE \$100!
Exotica • ROM
Denon drive package.
#1-1356 only \$799

FREE CATALOG OF ACCESSORIES & CD-ROMS

SONY
3.5" Disks
Qty 50 - 69¢ ea.
100 - 59¢ ea.
#915 Bulk with labels.

Add \$4 shipping/handling for UPS, \$7 for Federal Express (2 day service). CA. residents add 7.25% sales tax. Credit card orders call toll-free **1-800-843-9497**. Mail order with payment to: **EDUCORP** 531 Stevens Ave. #B Dept. PC, Solana Beach, CA 92075
FAX: 619-259-0367 Info: 619-259-0255

CIRCLE 414 ON READER SERVICE CARD

Communications/ Modems

Adapter Boards for PS/2's & XT/AT's



Add Parallel, Serial, or Special Ports for IBM Models 50, 55, 60, 70, 80

- 100% compliance to MCA spec
- Quantity and dealer discounts available

Parallel Port	\$129	Dual Serial	\$199
Dual Game Port	\$129	Dual RS422/485	\$295
Serial Port	\$145	Quad Serial	\$295
Dual Parallel	\$189	GPB-IEEE488	\$379
Parallel + Serial	\$189	Quad RS422/485	\$495

XT/AT Adapters

LPT/Serial Converter	\$189
GPB-IEEE488	\$199

EZBarcode® Readers for PS/2, PC/XT/AT, & Mac/ADB

- Keyboard Wedge or Serial I/O
- Free Barcode Printing Software
- Plastic, Metal, CCD, Laser Wands
- Mag-stripe and Barcode swipe options
- Low cost: Unit prices from \$289

1-800-533-6116

Method Systems, Inc.

3511 Lost Nation Road
Willoughby, OH 44094 • 216-942-2100

Computer Systems

MARYMAC®

Our 14th year of DISCOUNTS

TANDY® Computers & Fax Machines

Egt. Prepaid. Save Tax
Toll Free 800-231-3680

We will meet or beat
GUARANTEED LOWEST PRICES

Radio Shack® SCO® Tandy®

22511 Katy Fwy.
Katy (Houston) TX 77450
1-713-392-0747 FAX (713) 574-4567

CIRCLE 563 ON READER SERVICE CARD

FREE Computer Catalog

Deep Discounts on
4000

Computer Products

ELEK-TEK, Inc.

In IL 708-677-7660
800-395-1000

CIRCLE 441 ON READER SERVICE CARD

Computer Rental

OUR READERS KNOW WHAT THEY WANT!

CATALOG

And they're ready to buy. Give them the information they need with an ad in *The PC World Catalog*, and you'll fill an important need of your own... improved sales and profits! Call **800-435-7766** for complete details. In California, call 800-435-7760.

RENTALS

\$179
per mo

IBM PS/2
30-286



Also Available:

- IBM PS/2 • Compaq
- Macintosh • Laser Printers
- Laptops • Portables

And a host of other peripherals!

PC Computer Rental

Next Day Delivery
Anywhere in the U. S. A.

Call Toll-Free
800-765-4727

CIRCLE 545 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Computer Systems

Tandy Computers

Nationwide Sales - Guaranteed Best Prices

The Canfield Company

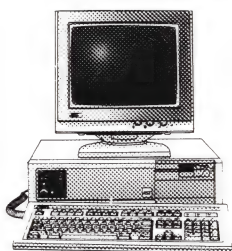
1-800-633-0197

400 Pennsylvania
Holton, KS 66436

A Radio Shack® Dealer

1-913-364-2171
FAX 913-364-4311

CIRCLE 541 ON READER SERVICE CARD



AST Computers

Bravo/286	739
Premium/286	969
Bravo/386SX	1349
Premium/386SX	1609
Premium 386/25	2789
Premium 386/33	3419
Premium/486	CALL

Panasonic Printers

KX-P1180	159
KX-P1124	279
KX-P1624	339
KX-P4420	899
KX-P4450i	1219

#1 COMPUTERS
Schaumburg, IL.

800-344-6468

CIRCLE 479 ON READER SERVICE CARD

REVITALIZE

the Compaq Portable
with a complete 80386
system upgrade

Superior quality components
including US-made 80386, 1 Mb
RAM, 160W p/s, 1.2 Mb floppy, 45
Mb 28 Ms disk, 1:1 controller,
installed and with 1 year warranty
\$2,345

With 88 Mb CDC Swift, 15 ms
\$2,995

You won't believe the difference!

Complete upgrades performed or
kits available for IBM XT, AT and
compatibles, \$1,395 - \$2,995.

5G Corporation

4131 Spicewood Springs - A-4
Austin, TX 78759

800/333-4131 • Fax 512/345-9575

CIRCLE 465 ON READER SERVICE CARD

Lower Prices - Better Quality

386-33 w/cache	\$1730	All systems include
386-25 w/cache	\$1390	1MB RAM (16 MB max)
386-25 MHz	\$1140	1.2 or 1.44MB floppy
386-16 MHz	\$790	1:1 HD/FD controller
286-12 MHz	\$570	AT I/O (2 S/1 P/1 G)
		101 keys enhanced KB
		Small footprint deluxe
		case w/ 200W PS
		Full one year warranty

Options	
Mono display & card	\$95
VGA display & card	\$405
Hi-res VGA & card	\$535
Modem 2400 (int)	\$85
Mouse (serial)	\$45
20 MB (65ms)	\$195
42 MB (28ms)	\$295
80 MB (28ms)	\$515
120 MB (28ms)	\$795
160 MB (28ms)	\$895

Low	Low	Low	Low
Computers	Monitors	Printers	Hard drives
IBM	NEC	Epson	Seagate
Apple	Mitsubishi	HP	Conner
Compaq	Samsung	Toshiba	Maxtor
AST	Zenith	Panasonic	Microplus

VISA/ Mastercard w/schg
Volume discount available
MICRO BASE (800) 345-4479
TECHNOLOGIES (408) 727-6276
3000 Scott Blvd #203 Santa Clara Ca 95054

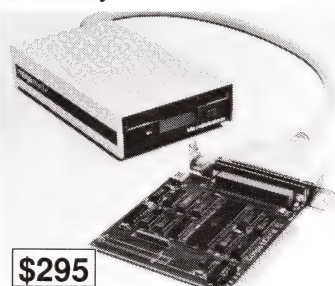
CIRCLE 423 ON READER SERVICE CARD

Disk Drives

Did You Hear Who's Easy?

megamate

— easy to use, easy to install, and easy on the
wallet. **Megamate** is the 3.5 inch 1.4 MB drive
you can add to any PC/XT/AT.



\$295

- Installs in just minutes.
- Handles any 3.5 inch IBM disk, 720 KB or 1.4 MB automatically.
- Complete — drive, card, software.
- Attractive and compact, barely bigger than a diskette.

MicroSolutions
Computer Products

132 W. Lincoln Hwy
DeKalb, IL 60115
815.756.3411

CIRCLE 536 ON READER SERVICE CARD

Expansion Units

MEMORY UPGRADES

5 YEAR WARRANTY! - FREE DELIVERY!

IBM PS/2 & LaserPrinter

2MB Module Model 80's	\$CALL
Model 70-E61;-121	\$190
2-8MB Exp Boards	\$CALL
Models 50, 60, 70 & 80	

1, 2, 3.5MB Memory Boards \$CALL
LaserPrinter 4019 & 4019e

Toshiba Laptops

2MB Upgrades	\$CALL
Models 1000SE, 1600, 3100e,	
3100SX, 3200SX, 5100, 5200	

COMPAQ Memory

DeskPro 386/20,25,20e,25e	
1MB Add-On Module	\$162
4MB Add-On Module	\$411
DeskPro 486/25, 386/33, SystemPro	
2, 8MB Add-On Modules	\$CALL

HP LaserJet Memory

1MB Upgrade - II; IID	\$166
2MB Upgrade - II; IID	\$249
4MB Upgrade - II; IID	\$470
1, 2MB Upgrades - IIP; III	\$CALL

Apple, AST, AT&T, DEC, Dell, Epson, NEC, SUN, Zenith, Others

SIGMA DATA
Scytheville Row • P.O. Box 1797 • New London, NH 03257

Established
1980

Call for latest pricing

TOLL FREE: (800) 446-4525

NH (603) 526-6909

FAX (603) 526-6915

CIRCLE 430 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Insurance

Control Repair Costs!

Now, there's a low cost way to insure against breakdowns. **SAFWARE FIX:IT** provides insurance for mechanical breakdown (wear & tear) as well as external losses (theft, fire, power surges, natural disasters and more). A single policy insures all your equipment for as little as \$100 per year. Call today

1-800-822-2345, Local 614-262-0708, Fax 614-262-1714.

SAFWARE

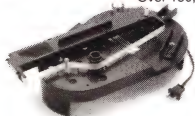
The Insurance Agency Inc.

2929 N. High Street P.O. Box 02211
Columbus, OH 43202

Peripherals

Never buy another ribbon!

Over 150,000 sold!!



MacInker™, the Automatic Ribbon Re-inker, re-inks any **PC printer ribbon** or typewriter (black & color) for 5 cents. Lubricating ink cools printhead, extends its life and yields better-than-new printout. Avge. re-inkings per cartridge: 60-100.

Universal MacInker (spec. cartridge or spool) **\$75.00. Epson or Imagewr. \$45.00.** Adapters available for any multicolor cartridge, **\$40.00.** We have a complete range of black, color, heat transfer, special ink cartridges. Satisfaction or 30 day refund. Free key-beeper-flashlight for orders >\$100.00. **Order toll free** or call to get full information.

(800)547-3303

Computer Friends
14250 Science Pk. Dr.
Portland OR 97229
tel. (503)626-2291
fax (503)643-5379

Major credit cards accepted. PCs from National Accounts accepted
Shipping \$5.00. cod add \$3.30

CIRCLE 483 ON READER SERVICE CARD

9-Track? Just call us.

It doesn't get any easier than this. A wide variety of PC-9-Track tape subsystems are available to you by phone, including tape drives, cards, and software:

- DOS, UNIX, XENIX, PICK, NOVELL Support
- 486, 386, 286 & PS/2 Compatible
- Menu-Driven Software
- 2 Year Warranty on Controller Cards
- 800, 1600, 3200, 6250 bpi
- 24 Hour Delivery
- Excellent for Hard Disk Backup

We invented the first PC-9-Track controller ten years ago, and have been on top ever since with the world's best selling cards. It's easy to find out why: just call us.

1-800-PC-9TRAK*

OVERLAND DATA

5600 Kearny Mesa Rd. San Diego, CA 92111
*1-800-729-8725 US & Can. • 1-619-571-5555 • FAX 1-619-571-0982

CIRCLE 554 ON READER SERVICE CARD

Memory Chips

CHIPS!
OVER 40 MILLION SOLD SINCE 1985

• **DYNAMIC RAM** •
SDRAM / SIPP
41256 • 1MEG
44256 • 4464
4164 • ALL SPEEDS!

UPGRADES: PS2, AST, COMPAQ, TOSH, DELL, ETC.

MATH	EPROM
80387-15 15MHz CALL	27C1000 ALL SPEEDS
80387-25 25MHz CALL	27C512 ALL SPEEDS
80387-20 20MHz CALL	27C512 ALL SPEEDS
80387-16 16MHz CALL	27C512 ALL SPEEDS
80387-12 12MHz CALL	27C512 ALL SPEEDS
80387-10 10MHz CALL	27C512 ALL SPEEDS
80387-8 8MHz CALL	27C512 ALL SPEEDS
80387-6 6MHz CALL	27C512 ALL SPEEDS
80387-4 4MHz CALL	27C512 ALL SPEEDS
80387-2 2MHz CALL	27C512 ALL SPEEDS

CALL FOR PRICES!
WE'LL BEAT ANY PRICE!
1-800-827-CHIP
CALIFORNIA MICROCHIP
SAME DAY SHIPPING!
IN CALIF. 818-882-1355
VISA/MC 3% MORE • C.O.D. CASH/CO. CK. OAC

CIRCLE 588 ON READER SERVICE CARD

**PLACE
YOUR AD IN
The PC World
Catalog TODAY.**
800-435-7766
In CA: 800-435-7760

Memory boards

IMPROVE YOUR MEMORY

- We Carry All PC Upgrades

- IBM PS/2

2 MB Module Mod. 70, 55 SX \$235

- COMPAQ

1 MB Module - 386/20E, 25, S \$140

4 MB Expan. Brd. 386/20E, S \$550

- New System Pro.

- HP LaserJet

- Apple

- 5 Year

- Warranty



SPECIALIZED SYSTEMS TECH.

Call for Free Catalog

1-800-688-8993

CIRCLE 429 ON READER SERVICE CARD

paperTamer™

brings the flexibility and convenience of image-based automated document storage and retrieval within the reach of everyone.

No special hardware needed, just your PC and scanner.



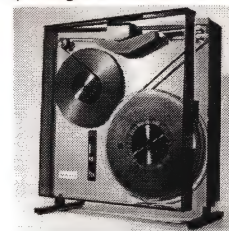
from
**FLAGSTAFF
ENGINEERING**

Call (602) 634-5100.

CIRCLE 556 ON READER SERVICE CARD

THE TRUE 100 IPS 9 TRACK TAPE SUBSYSTEM for IBM PC/AT/386

operating at 800*/1600/3200 BPI



You don't have to sacrifice these features:
100 IPS speed...doubles your throughput
Protects tape from dust while running*
Full 1 year Warranty

Tension control to insure IBM interchange

Popular interfaces and mountings

SHOWN W/OPTIONAL PROTECTIVE DUST COVER

AKSystems Inc.

20741 Marilla St.

TEL:818/709-8100

*OPTIONAL
Chatsworth CA 91311

FAX: 818/407-5889

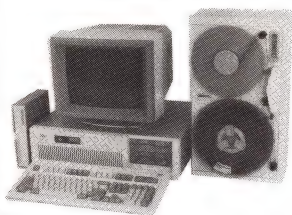
CIRCLE 584 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

9-Track Tape Subsystem



Now you can exchange data files between your IBM PC/XT/AT and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10 1/2" streaming tape drive, tape coupler card, cables and software.

QUALSTAR

9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

Tape Back-Ups

9-Track Tape For Your IBM PC/XT/AT/PS-2™



Read 1600 or 6250 bpi 9-track tapes from a micro, mini or mainframe in EBCDIC or ASCII as mirror image or by individual files.

Use the 2000 PC™ for disk backup, data interchange or archival storage. PC/XT/AT/PS-2 are trademarks of IBM. 2000 PC is a trademark of Digi-Data.



DIGI-DATA CORPORATION
8580 Dorsey Run Road
Jessup, MD 20794-9990
(800) 782-6395
FAX (301) 498-0771
... First In Value

CIRCLE 428 ON READER SERVICE CARD

MISCELLANEOUS/ Accessories

A NEW CONCEPT
Safely store your keyboard

KLINGON
KEYBOARD HOLDER™

Manage Your Desk Space
Keyboard Always Accessible

\$11.95 + \$3 S&H • Qty. Disc. Avail.
MC/VISA/CK or M/O - FREE BROCHURE



Upright Solutions, Inc.

P.O. Box 1286 • Elmhurst, IL 60126

CALL 708-832-5370 FAX 708-832-4809

CIRCLE 594 ON READER SERVICE CARD

Mouse Pads w/your Logo

Qty.	Canvas	Hard Surface
• 12	\$8.50	N/A
• 72	\$5.90	\$7.15
• 144	\$3.96	\$5.21
• 500	\$3.40	\$4.65
• 1000	\$3.28	\$4.53

Canvas: Grey, Red, Gold, Blue, Tan
Hard-Surface: Gray, White, Blue Size: 9.5" x 8" x 3/8" Multi-color OK
SAMPLES with your logo \$12.50 ALL prices include logo. Entire pad imprintable. Imprints 100% GUARANTEED

Computer Expressions
3833 Chestnut Street
Philadelphia, PA 19104
800/443-8278, 215/222-4400

Custom Imprinted IBM Key Caps



Hooleon SnapCap Kits Supporting:

WordPerfect 5.0™
or IBM® 5251
Emulation

For 101-Key Keyboards

Customize Your Keyboard with:

- Custom Key Imprinting
- Keytop Label Kits for Software
- Relegendable Keys for Cherry™, Wyse™ & Key Tronic™
- Custom Keytop Label Imprinting
- Keyboard Protectors & More

Call for your FREE CATALOG!

800 937-1337

602 634-7515 FAX: 602-634-4620

Hooleon CORPORATION P.O.B. 230, Dept. PCWD
Cornville, AZ 86325
See us at **FALL COMDEX**
Sands Booth N2293

CIRCLE 518 ON READER SERVICE CARD

Security

HANDS OFF THE BOARD™ PC SECURITY



1/2 SIZE SECURITY BOARD

- Stop floppy boot—Require password to boot PC
- Real-time disk encrypt—prevent boot sector virus
- Prevent DOS FORMAT/FDISK and low-level formats
- Set hard disk READ ONLY or turn ON/OFF
- Turn floppies, printers and COM ports ON/OFF
- IBM XT, AT Bus—DOS V3.0+

Price: **\$149.95**

add 5.00—shipping/handling

Check, Money Order, VISA, MC accepted
Systems Consulting Inc.
412-963-1624

PO Box 111209, Pittsburgh, PA 15238

CIRCLE 515 ON READER SERVICE CARD

Tandy Peripherals

**Computer
mechanix**

1-800-448-1436

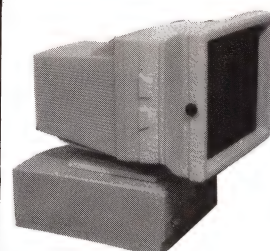
Portage Plaza HWY M-26
Houghton, MI 49931
(906) 482-9476

Tandy Computer Support
is our only Business

If it can be done, we've done it!
Compatibility 100% Guaranteed !!

Ask about our complete line
of peripherals for Tandy PC's.

CIRCLE 472 ON READER SERVICE CARD



NUVU

**ENLARGE YOUR
MONITOR SCREEN
OVER 70%!**

High quality lens by 3M coupled with a Polaroid anti glare filter. In several designs to fit most common monitors.

FINALLY A BIG CLEAR PICTURE!

To order, or for more info:

• 800-872-1051 •

Other models available.
Dealer inquiries invited.

Less Gauss Inc.
Box 5006 Rhinebeck, N.Y. 12572

CIRCLE 417 ON READER SERVICE CARD

FREE CATALOG

COMPUTER SECURITY PRODUCTS

- Theft Protection • Unauthorized Access/Use Control • Software Security

1-800-766-LOCK

DOSS INDUSTRIES
1224 Mariposa St. SF CA 94107

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Accessories

PC-EZE

Introduces software keyboard template management.

* Keyboard Template Attachment @ \$2.95

- Attaches directly to keyboard
- Install/Remove easily

* Keyboard Template Pouch @ \$2.95

- Safely attaches to monitor
- Complete w/attachment
- Size - 4" x 5"

S&H - \$1.00 per order - Visa/MC.

Send to:

PC-EZE

P.O. Box 1068

Orem, UT 84057

* UT res. add 6% sales tax

Bar Coding

PERCON® Bar Code Readers for Apple®, DEC™, IBM®, and Wyse® Computers

Call 1-800-8-PERCON for more information.

PERCON
INCORPORATED

2190 West 11th Ave., Eugene, OR 97402-3503
(503)344-1189 FAX (503)344-1399

AppleLink: D3857

CONNECT: PERCONENG 1

CIRCLE 427 ON READER SERVICE CARD

FREE GLOBAL CATALOG

148 page guide to computer furniture, supplies and accessories

Dial Toll-Free
1-800-8-GLOBAL

GLOBAL
COMPUTER SUPPLIES
11 Harbor Park Dr.
Port Washington, N.Y. 11050

CIRCLE 508 ON READER SERVICE CARD

PC-WAND® Bar Codes

SOFTWARE - Laser & matrix print labeling. Our full line of readers know all standard codes, & use pistol, wand, slot reader or magnetic stripe.

PC-WAND 100 - Inserts label data as PC keystrokes.

PC-WAND 200 - For all common terminals.

PC-WAND 300 - Up to 128 readers into 1 port.

PC-WAND 800 - Portable programmable hand-held terminal with software, keyboard & display.

30 day money back guarantee, 1 year warranty, dealer programs, excellent free telephone support.

INTERNATIONAL TECHNOLOGIES & SYSTEMS CORP.

655-K North Berry Street, Brea, CA 92621

PHONE: 714 990-1880

FAX 714 990-2503

ITS
DEALER INQUIRIES INVITED

CIRCLE 501 ON READER SERVICE CARD

DUST COVERS 100% COTTON CANVAS

Breathable! Static-Free! Beige with Grey Trim
For Computers, Keyboards, Printers & Lasers
All Popular Models. Superior Quality. Best Price

NEW! Seal-Skins For Keyboards

\$24.95

1-(800) 826-5761

Visa

415 759-1466 Fax: 415 564-0506

1320-36th Ave San Francisco CA 94122

CIRCLE 543 ON READER SERVICE CARD

VARIANT MICROSYSTEMS BAR CODE READERS DELIVER WAND/ LASER/ MAGNETIC CARD CONNECTIVITY

- Keyboard wedges (Internal/External) for IBM PC/XT/AT, PS/2 and portables.
- RS232C wedges for WYSE, Link, Kimtron terminals
- Autodiscriminate between codes 3 of 9, UPC, EAN, 12 OF 5, Codebar, Code 128
- Interface with wands, Symbol Technologies, Metrologic and Photographic Sciences lasers
- Bar code and label printing software
- Full two year warranty
- 30 Day Money Back Guarantee
- Extensive VAR Dealer Discounts

VARIANT MICROSYSTEMS
3140 De La Cruz Blvd.
Suite 200
Santa Clara, CA 95054

Phone (408) 980-1880

Fax (415) 623-1372

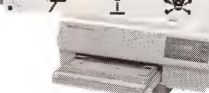
CIRCLE 468 ON READER SERVICE CARD

LABELING SOFTWARE

LABELS

BIG TEXT 128 CODES
UPC, MSI, 2 of 5, 128, Code 39
FLEXIBLE FORMAT/SIZE

16 TEXT SIZES, 18 BAR CODES
LOGOS/SYMBOLS



- For Epson, Oki, IBM, and LaserJet
- Flexible design. Any Format or size.
- On-Screen Label Design, WYSIWYG
- 16 text sizes — 3" reads at 100'
- Bar codes: 2of5, 128, UPC/EAN AIAG, MIL-STD, ZIP+4, & Code 39
- Auto-incrementing. File input.
- Logos, symbols — from scanners.
- Reversals, color, soft fonts.
- Powerful, Versatile, Fast, Easy!

- Above label printed with LabelRIGHT™ — \$279
- Other menu driven programs from \$49. XENIX — \$199
- MS-DOS user callable routines from \$179

Portable Readers

- Battery operated reader
- Simple, powerful, 64K memory
- Bar code or keyed input
- MSI, 2of5, UPC/EAN, 128, Code 39
- Easily programmable prompts
- Uploads via RS-232 or keyboard
- Doubles as non-portable reader
- Wand or laser input
- Complete with wand — \$849

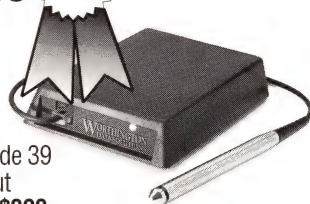


Bar Code Readers

for PC, XT, AT, PS/2, Mac and all RS-232 Terminals

- Attaches as 2nd keyboard
- No software changes
- 2of5, UPC/EAN, 128, MSI, Code 39
- Magstripe, laser, or wand input
- Complete with steel wand — \$399

FILEKINES MAGAZINE
"Outstanding Price And Performance"



WORTHINGTON

Direct from manufacturer
30 day \$ back guarantee!

DATA SOLUTIONS

417 Ingalls Street
Santa Cruz, CA 95060

800-345-4220

CA 408-458-9938



Call Sandie Wade
PC World Catalog Manager
1-800-435-7766
1-800-435-7760 (in CA)

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Mag-Tek Magnetic Stripe Card Readers

- Attaches to a computer keyboard or to any flat surface
- LED light provides continuous reader status
- Works with Mag-Tek Encrypting and Non-Encrypting PINPads
- For use with AT/XT and PS/2 model computers
- RS-232 and PC Keyboard Wedge versions available



RS-232 Reader

Interfaces easily with a host computer or ASCII terminal via the RS-232 serial port.

User can set parameters such as mode of operation (buffered or unbuffered) baud rate, etc. via the switch block settings.

CIRCLE 437 ON READER SERVICE CARD

Mag-Wedge Reader

Connects between the PC and PC keyboard. Transmits magnetic stripe card data to the PC as if it were key entered.

MAGTEK

20725 South Annalee Ave.
Carson, CA 90746
Phone: (213) 631-8602
Fax: (213) 631-3956

BAR CODE READERS

FOR PC'S:

- PC/XT/AT & CLONES
- PS/2 - ALL MODELS
- TANDY 1000 SX/TX/SL/TL/1200/3000/4000
- ZENITH 138/148/151/158/248
- EPSON EQUITY III/II+/II+

- NO SOFTWARE CHANGES REQUIRED
- DATA APPEARS AS KEYBOARD INPUT
- READS CODE 39, I-2 OF 5, UPC A/E, EAN 8/13, CODABAR
- AUTO-DESCRIMINATES BETWEEN CODES
- DIRECT FROM MANUFACTURER
- 30 DAY MONEY BACK GUARANTEE
- SAME DAY SHIPPING

FOR TERMINALS:

- WYSE 30/50/60/75
- KIMTRON KT7/PC & KT70/PC
- LINK MC-5
- RS-232

BAR CODE PRINTING SOFTWARE:

- MS/PC DOS SYSTEMS
- 9 & 24 PIN DOT MATRIX
- H-P LASER JET/PLUS/SERIES II

RESELLER DISCOUNTS AVAILABLE

AMERICAN MICROSYSTEMS

2190 A REGAL PARKWAY
EULESS, TX 76040 (817) 571-9015
(800) 648-4452
FAX (817) 685-6232

BLACKJACK COMPUTER



The ultimate card-counting weapon, operated under complete concealment within the casinos. CPU, "magic" shoes, I/O switches, sensors, power supplies, extensive training and support provided. Win consistently with the latest generation of the technology every casino fears the most.

Contact

(714) 865-1191

CIRCLE 571 ON READER SERVICE CARD

BAR CODE & MAGNETIC STRIPE READERS for the IBM PC & PS/2

Simple & quick installation
No additional software or port
Metal wand & case

Also available:

- SmartCard encoder/reader
- Bar code printing software
- Magnetic stripe encoders
- Units for other computers & terminals

TPS ELECTRONICS

4047 Transport Street
Palo Alto, CA 94303

Telephone: 415-856-6833

1-800-526-5920

Telex: (Graphnet) 371-9097 TPS PLA
FAX: 415-856-3843

CIRCLE 522 ON READER SERVICE CARD

TKS Builds a Better Bar Code Reader!

- Plastic wand is rugged, lightweight and comfortable, even after hours of use (metal wand also available)

- Converts to RS-232 or Macintosh version with optional back panel
- Durable extruded aluminum case
- Reads all major bar code types
- Automatic setup from bar code menu
- 30-day money-back guarantee

EZBarcode PC-WEDGE II

- Free bar code printing utility included
- Complete with wand, it's

only \$289!

RS-232 version \$319
Macintosh version . . . \$309
Metal wand add \$60
Mag stripe option . . add \$100

Portable Hand held Data Collection Terminals

- PHT-34: Alphanumeric keypad, bar code wand, 128K memory . . \$1095
- PHT-34: Alphanumeric keypad, bar code wand, 512K memory . . \$1495
- PHT-60: Graphics touch-sensor LCD display, programmable function keys, bar code wand, RAM card port, 256K memory . . . \$1795

Bar Code Printing Programs . . \$149 each

- Print Code 39, UPC, EAN, 2 of 5 on dot matrix or Laser Jet printers
- EZBarcode II - Keyboard or text file input, automatic incrementing, on-line help
- dBARCODE - Prints bar codes from within dBASE; dBASE language source code included
- EZRes - Memory resident program prints bar codes from within DOS applications

TimeKeeping Systems, Inc.

1306-W East 55th Street
Cleveland, Ohio 44103

Phone: (216) 361-9995 • Fax: (216) 361-0030 • Telex: 6503183986MCI UW

PHT-60



Business Opportunities

Software Dealers Wanted

Perfect Care program needs dealers. We teach how to sell, install & support our medical billing sys. to MDs...a profitable high growth service industry. We offer:

- Training & continuous support
- 7 yrs of medical computer exp.
- Protected territories nationwide.

Ted Itzkowitz

STI Computer Services, Inc.
251 W. DeKalb Pike-Concord 107
King of Prussia, PA 19406
215/768-9030

The Catalog Disk™

Shopping from your home

Free Products

ORDER:



travel
jewelry
food
computer
supplies
groceries
and more!

ORDER TOLL FREE 1-800-243-9332

ONLY \$9.95 - Refundable in your 1st order
AMEX, Check or Moneyorder

COMPU-MALL

P.O. Box 165639, Miami, FL 33116

CIRCLE 410 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Catalogs

PCjr Owners!!

Everything You'll Ever Need Plus Much, Much More!!

- Memory Sidecars - Expand now to 1.2 MB!
- Second & Third Disk Drives which Snap-on-Top
- 3 1/2" 720K Disk Drives for PS/2 Compatibility
- Speed-Up Boards-Increase Speed to 9.54 MHz
- 20, 30, 40, 60 & 80MB Hard Disk Drive Systems
- 101-Key Enhanced PCjr Keyboards
- Serial Port Compatibility Boards
- Modifications for Tandy Compatibility
- PCjr Compatible Software & Game Cartridges
- PCjr System Units with 128K or 256K
- Diagnostic Service Only \$25
- Replacement Parts and Repair Service

Remember—When you purchase all your PCjr products from PC Enterprises you'll never need to worry about compatibility. Our new full color catalog now features over 300 PCjr products on 56 pages. Call or write for your FREE copy today!!

(800) 922-PCjr (201) 280-0025

PC ENTERPRISES

"The jr Products Group"
PO Box 292 Belmar, NJ 07719
"Dedicated to the Support of the PCjr Since 1984"

CIRCLE 516 ON READER SERVICE CARD

Computer Insurance

ComputerInsurance PLUS

Insure in one easy step! ComputerInsurance PLUS replaces your computer after fire, theft, power surge, natural disasters, including earthquake. Call NOW to receive comprehensive coverage and full replacement. The ComputerInsurance Agency, Inc. 6150 Old Millersport Rd. NE Pleasantville, OH 43148 1-800-722-0385, Hours: 10 a.m. - 6 p.m.

SAFWARE

Insure your computer. Safware provides full replacement of hardware, media & purchased software. As little as \$49 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST (Sat 9 to 5) Safware, The Insurance Agency 2929 N. High St., PO Box 02211 Columbus, OH 43202 800/848-3469, 614/262-0559

Data/Disk Conversion

TAPE/DISK CONVERSIONS



Conversion services to or from over 2000 computer systems:
• Magtapes • Mini Computers
• Micro Computers • Typesetters
• Word Processors

CALL THE INDUSTRY LEADERS

PIVAR
COMPUTING SERVICES, inc.

800-CONVERT
165 Arlington Heights Rd #W
Buffalo Grove, IL 60089



Incompatible Computers?

We transfer files between incompatible computers, dedicated word processors, and magnetic tape.

Our twelve conversion systems support thousands of different formats.

- Cartridge tapes (Incl. TK-50)
- 9-track tape (800 to 6250 BPI)
- 3 1/2", 5 1/4", 8" floppy disks
- Optical disks; other formats

Disk Interchange Service Co.

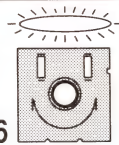
2 Park Drive • Westford, MA 01886 • (508) 692-0050

CIRCLE 525 ON READER SERVICE CARD

SCANNING any font or typestyle disk or tape CONVERSION DUPLICATION any size, any quantity

- Data Entry
- Custom Programming
- Data Management
- Bar Code Conversion

(708) 858-4566



We perform miracles!

MEDIA CONVERSION CORP

Free Tests and Quotations—24 Hour Turn-Time

CIRCLE 462 ON READER SERVICE CARD

9 TRACK MAGNETIC TAPE CONVERSION



If you process fewer than 3 tapes per week*, we can probably save you money and time. With 24 hr. turnaround (6 hr optional), we can provide:

- Tape to Diskette
- Diskette to Tape
- DEC, IBM & ANSI
- 800/1600/6250 BPI
- Tape data recovery
- Free compression
- Database Conversion
- Mail Lists from Tape
- Monthly Activity Summary

AKSystems can also analyze problem tapes for you and retrieve data that otherwise may be lost. Using an extensive array of test equipment, we can determine if tapes you have are written consistent with the appropriate ANSI and IBM interchange standards. This gives you an outside authority for verifying the quality of the tapes you receive.

AKSystems Inc.

*Call for free cost analysis of tape processing.

Services Division

Chatsworth, CA 91311, 818/709-8100 (v) 818/407-5889 (f)

CIRCLE 567 ON READER SERVICE CARD

CONVERTING YOUR DISKETTES?

ENTRUST THEM TO US
2500 Word Processor & Computer formats 3 1/2, 5 1/4, 8" Disks, MAGTAPES, MAGCARDS CARTRIDGES, CASSETTES

DISK DUPLICATION OCR SCANNING SERVICES

Customized conversions too! Call us for quality, best prices and quickest turnaround time.

COMPANY COMPENDIA, INC
TEL: 312-419-8771 (Chicago)
FAX: 312-419-1390

CIRCLE 561 ON READER SERVICE CARD

RGA DATA CONVERSION CENTER

Tape, disks, micros, minis, mainframes, word processors, typesetting, and more...

- Same day service
- IBM 4300 on premises
- Conversion to/from all systems
- Hundreds of conversion programs
- Customized programming
- Corporate Accounts Welcomed

(212) 995-1090

Ralph Garner Associates, Inc.

215 Park Avenue South, New York, NY 10003
Professional services since 1967

CIRCLE 408 ON READER SERVICE CARD

Disk Copy Service

DUPLICATION FROM \$.59 HIGHEST QUALITY MEDIA

MSDOS duplication from \$.59 (5.25") and \$.99 (3.5"). Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Custom Packaging & Assembly
- Colored Media Available
- Special Rates For Demo Software & Site Licensing
- Educational Discounts Available
- 24 Hour Turn-Around
- Guaranteed Products

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 422 ON READER SERVICE CARD

Disks

FORMATTED DISKETTES BASF, MITSUBISHI, SONY

WITH FORMAT	QTY 250 MIX & MATCH	WITHOUT FORMAT
\$.44	5.25" DS/DD	\$.38
\$.77	5.25" DS/HD	\$.57
\$.71	3.50" DS/DD	\$.55
\$1.64	3.50" DS/HD	\$1.40

- FREE FORMATTING on First Order
- TYVEC SLEEVES & Labels Included
- COLORED MEDIA Please Add \$.05
- PRIVATE LABELING Available
- SAME DAY Shipping
- MONEY BACK GUARANTEE

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 448 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Services

Lower Training Costs!

Less than \$10 can cover training and support for your entire office! Order a superior **TRAINING RESOURCES** training module complete w/training/reference mat'ls and get **unlimited**

- Distribution to all users
- Support
- 60 day guarantee

Perfect supplement for individual or group training! Call for information.

TRAINING RESOURCES

4024 Garfield St. #A

Carlsbad, CA 92008

1-800-456-5404

HEWLETT PACKARD® DESK JET USERS! SAVE MONEY and GET TOP QUALITY PRINTING

with our INK Refill™

Savings up to 50% per page
with improved quality

The latest in Ink Jet technology
for HEWLETT PACKARD'S
premium drop-on-demand ink
jet printers.



Black Twin Pack \$19.95
Green, Red & Blue Twin Pack \$26.95
Please add \$3.00 Shipping & Handling
MD, VA, DC Sales Tax

Send Company Check or Money Order payable to
THE CARTRIDGE CONNECTION
8809 Walker Mill Road • Capitol Heights, MD 20743
301-350-9146

Think Jet! Quiet Jet — Available Soon

CIRCLE 424 ON READER SERVICE CARD

SOFTWARE/Accounting

DATASMITH Payroll

Ten years in the field. Pension/cafe'teria plans, magnetic filling, multi-states, multi-companies, more. Regular & special deductions with tax treatment control. Exempt/deferred payments. Easy Corrections! Advanced options include Direct Deposit, Benefit Accrual, IMPORT/EXPORT, more. Order demo today!

Datasmith, Inc.

10020 Fontana Lane

Overland Park, KS 66207

913/381-9118

MIP Fund Accounting

MIP - Finest fund accounting system for non-profit and governmental organizations. Modules - G/L, Payroll, Accounts Payable, Encumbrance (P.O.), Accounts Receivable, Fixed Assets, Budget Reporting, and Interface. For IBM XT/AT compatibles, most LANs. Complete training available.

Micro Information Products

505 East Huntland Dr., Ste. 340

Austin, TX 78752

800-647-3863, 512-454-5004

dBASE Business Tools

- General Ledger
- Accounts Payable
- dInvoice & A/R
- Sales Analysis
- Order Entry
- Purchasing/Invnty
- Payroll
- Laser-Forms
- Job Costing
- Job Estimating
- Bill of Materials

\$99 ea. incl. Source Code M/C-AMEX-
Visa-Check-COD

Datamar Systems

4876 Santa Monica Ave. #W1

San Diego, CA 92107

800/223-9963, 619/223-3344

THE GENERAL STORE RETAIL OPERATIONS SYSTEM

The complete software system for Retail. Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credit card authorization. Controls all types of retail stores. Call today for more information.

Accounts Receivable
Inventory Control
Point of Sale
Accounts Payable
General Ledger
Mailing List
• Hardgoods
• Apparel

\$995 Complete system.
Dealer inquiries invited.

Crichlow Data Sciences, Inc.

(804) 471-0500

P.O. Box 6420 - Virginia Beach, VA 23456

CIRCLE 470 ON READER SERVICE CARD

Supplies

reconditioned **TONER** cartridges!
for laser printers
& Canon PC Copiers

BETTER THAN NEW!
• 20% MORE TONER
• DARKER PRINT
• 100% GUARANTEED

From **\$44.95**

We buy empties
call for brochure

Willow Products Corp.
3857 Willow Ave, Pgh, PA 15234

800-426-8196

WILLOW

CIRCLE 535 ON READER SERVICE CARD

FREE TONER RECHARGE FREE

When we recharge four cartridges for you, either individually or in a group receive your fifth recharge **FREE.**

Recharge a 5th one **FREE.**

• 24 hr. turn around
• Satisfaction guaranteed
• New 50 point inspection test

• Laser/PC copiers
• Color available

39.95

4825 E. Indianapolis Ave. • Fresno, California 93726

1-800-736-6342

We buy empties. American Express

CIRCLE 506 ON READER SERVICE CARD

TONER

Your Cartridge: for HP, Apple, etc. rebuilt

24 hour turnaround

100% Satisfaction

Toner for NEC, Ricoh, Panasonic, Qume, etc.

2 DAY AIR Return Delivery

HP II-P cartridges rebuilt: 46.50

New cartridges from 79.50

800-777-8444

• Franchises
• Wholesale

LASER Quip™

7615 Washington Ave. S.
Edina, Minnesota 55435

CIRCLE 574 ON READER SERVICE CARD

COMPUTER PRINTER RIBBONS
Highest Quality! Lowest Prices!

National distributor of highest quality ribbons in the industry. 1000's of satisfied customers nationwide! You don't spend one thin dime until you judge our quality.

★ 100% ★
Satisfaction Guaranteed

1-800-848-7232 GROUP MARKETING SERVICES

CIRCLE 598 ON READER SERVICE CARD

What do more than 1400 Government and Nonprofit Organizations Know?

When You Need Fund Accounting Software... You Need American Fundware.

American Fundware provides powerful software solutions - written specifically for the government and nonprofit sectors - that solve your fund accounting needs. Easy to Learn. Easy to Use. Easy to Produce Results.

FOR MORE INFORMATION CALL AMERICAN
FUNDWARE TODAY.

1-800-551-4458 or Fax: 1-303-879-6850

P.O. Box 773028, Steamboat Springs, CO 80477

CIRCLE 502 ON READER SERVICE CARD

NETWORK COMPATIBLE ACCOUNTING & INVENTORY CONTROL SOFTWARE

General Ledger, Accounts
Receivable, Accounts Payable,
Payroll, Inventory Control, Sales
Order, Purchase Order, POS

**1-800-
735-7159**

**\$499
Complete
\$20 Demo**



CIRCLE 443 ON READER SERVICE CARD

FUND Accounting

Automatically reports your most pressing info needs: Mgt. reports, financial stmts., budget comparisons, project expenses. FREE spreadsheet interface. Integrates with AR, AP, Payroll. PC-Network compatible. Demo, pre-sale set up, post-sale training/installation available. 30-days FREE phone support.

Executive Data Systems, Inc.

1845 The Exchange #140

Atlanta, GA 30339

800/272-3374, 404/955-3374

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Accounting

ACT 1
SERIES
\$179⁵⁰

+11.50 Shipping & Handling, U.S.

Includes:
General Ledger
Accounts Receivable
Inventory
Sales Invoicing
Accounts Payable
Payroll
1-800-344-2540

COUGAR MOUNTAIN
S.O.F.T.W.A.R.E.

2609 Kootenai • Boise, Idaho 83707

Accounting At Its Best

OTHER PROGRAMS AVAILABLE

ACT-2 multi-user or network ready accounting.
ACT-4 multi-user for XENIX System V Fund Accounting, single and multi-user for non-profit organizations.
Bill of Materials for manufacturing inventory.
Point of Sale with bar code and cash drawer interface.
Training Seminars and Toll-Free Hotline Support Available.
Hardware Requirements: IBM PC* or compatible. Hard disk required.

ACT 1
BEST BUY
3 Consecutive Years



Trademark: IBM-
International Business
Machines. XENIX.
Micro Soft.

CIRCLE 553 ON READER SERVICE CARD

Nonprofit Software!

ECHO software has been meeting the needs of hundreds of organizations like yours since 1980. We offer complete Accounting, Fund Raising Management, Human Service Client Information & Third-Party Billing Systems. All provide clear, tight audit trails, flexible reporting & easy operation. Single user & network versions available. For information:
Echo Consulting Services, Inc.
PO Box 540
Center Conway, NH 03813
800/635-8209, 603/447-5453

REACH
2.5 MILLION
BUYERS.
ADVERTISE IN
The PC World Catalog.
CALL 800-435-7766
In CA: 800-435-7760

Business Applications

PC-POS
Point Of Sale for PC's

The ultimate computer solution for retailers. PC-POS™ offers real time processing of sales transactions, updating inventory records instantly. Up to the minute sales and management reports let you run your business with confidence. Handles all inventory items, customers, vendors, salespersons & commissions, purchase orders, counting & receiving stock, and more. Network available.

Introductory Offer - \$995 Satisfaction Guaranteed
1-800-451-3363 or 214-423-4979 (in TX)

MICROSPEC INC.

840 East Central Pkwy #100 • Plano, TX 75074

CIRCLE 534 ON READER SERVICE CARD

Accounting Forms

REPLACE PRE-PRINTED FORMS!
LASER PRINT FORM and DATA on BLANK PAPER AT THE SAME TIME!
INVOICES-STATEMENTS-CHECKS-PURCHASE ORDERS
SHIPPING LABELS-LETTERHEADS-MORE!
TYPESET QUALITY LASER FORMS PRINTED FROM INSIDE YOUR APPLICATION. ONE DISK DOES IT ALL!
NEVER RUN OUT OF FORMS. NO MORE ALIGNMENT PROBLEMS.
\$149.00 = A LIFETIME SUPPLY OF FORMS.
Total Laser Printer Support for RealWorld 5.0, Peachtree Complete III, Champion DacEasy, BusinessWorks, SBT, AccountMate, Acopac, More!
Call and order for your favorite! ORDER LINE (800) 749-2335 VISA/MC
Trans-Micro, Inc., 3040 Industrial 33rd St., Ft. Pierce, FL 34946 (407) 464-5335 FAX: (407) 466-3805

CIRCLE 510 ON READER SERVICE CARD



Find out more about the
PC World Catalog.
Call Elizabeth Maffly at
1-800-435-7766
1-800-435-7760 (in CA)

OSHA/EPA Reporting

HAZCOM/2* is a DBMS that allows entities to comply with OSHA's Hazard Communications and/or EPA's SARA reporting requirements. HAZCOM/2 allows the user to create & maintain MSDS's, Tier Inventories & Toxic Chemical Release reports. Prepares Federal and/or State facsimile forms. Demo \$25. MC/Visa/PO/ pp.
PICO Information Systems
149 N. 5th Street
Springfield, OR 97477
503/726-7823, 503/746-4547 Fax

StaffMinder™

A Must for All Managers!
Clever staff administration software brings you six steps closer to total control!



\$395 • Satisfaction Guaranteed
1-800-966-0707

Next Generation Software

3340 Peachtree Rd #1445 • Atlanta, GA 30326

CIRCLE 475 ON READER SERVICE CARD

EZ-FORMS DATABASE

Forms & DataBase Management

InFORMation processing at its best!
Native .DBF file format. Sort, Query, etc.
EZFX-Forms processor features: solid lines, fill-out pre-printed too, full math, macros, auto-date/time/number, full printer support, much more... \$239
LAN version available.
Other EZ-FORMS™ start at \$69.

EZX, 917 Oakgrove, Houston, TX 77058

Info: 713.280.9900 • BBS: 8180 • FAX: 0525

Orders (D,M,V,A,X), Catalog Toll Free

1-800-359-953 • 9 ext. W1090

CIRCLE 548 ON READER SERVICE CARD

Do You Ship by UPS®?

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. \$395 & up; 60 Day \$ back gtd. UPS acceptance gtd. Full featured demo disk: \$4 s/h.

Aristo Computers, Inc.

6700 SW 105th Ave. #307-J

Beaverton, OR 97005

800/3ARISTO, 503/626-6333

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Church Applications

CHURCH SOFTWARE

**POWER
CHURCH
PLUS!**

Discover for yourself why more churches are choosing **Power Church Plus**. Try out the leading membership and accounting package.

Call today for your **FREE** full-working **DEMO**.

F1 Software
P.O. Box 3096,
Beverly Hills, CA 90212
(213) 854-0865

*"church office computing
has come of age."*
Neil Houk, Church Bytes
October 1988

CIRCLE 562 ON READER SERVICE CARD

Church Mgm't Systems

Easy-to-use, flexible & integrated. Network version available. Local representatives & toll-free support back a comprehensive line of Church & School products. 1200+ satisfied Church, School & Government users. Write or call,
The Software Library
3300 Bass Lake Rd.
Brooklyn Center, MN 55429
800/247-8044, 612/566-4212

Church Partner

Written by Computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For IBM compatibles, LANs, Macintosh, XENIX. We understand computers and churches.
Summit Systems, Inc.
Suite 121, 16 Berry Hill Rd.
Columbia, SC 29210
803-798-9749, FAX: 803-731-0349

Construction

Construction Accounting

Comprehensive, affordable software for builders & contractors. Job cost, billing & draws, payables, check writing, purchase orders, discount & retention tracking, all in one package-\$795. Reviewed & approved by National Assn. of Home Builders. Also available: General Accounting & Payroll.
Yardi Systems, Inc.
813 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Data Entry

Viking Data Entry

New, professional quality package features:

- Faster, easier keyboard entry, verification
 - Advanced data Validation insures accuracy
 - Easy access to ISAM or sequential data files
 - Available for MS/DOS, UNIX, XENIX, VMS, and AIX operating systems
 - Incomparable technical support
- Viking Software Services, Inc.*
4808 E. 67th Street, Suite 100
Tulsa, OK 74145
918/491-6144 Fax: 918/494-2701

KeyEntry III

- ☐ Replace dedicated data input systems
- ☐ Front-end mainframe applications
- ☐ LAN or stand-alone environments
- ☐ Screen Painter and MenuManager included
- ☐ Batch Control System and Reformat utility
- ☐ Spanish, German, and French versions
- ☐ Outstanding customer support
- ☐ Thousands of users worldwide
- ☐ OS/2 version

FREE 30-day evaluations available for qualified companies.



SCS

Southern Computer Systems, Inc.
2732 Seventh Avenue South
Birmingham, Alabama 35233
(205) 251-2985 Fax (205) 322-4851
(800) 533-6879

DATA ENTRY

Why have over 85% of the largest companies in the U.S. selected the **RODE/PC Data Entry System**?

The answer will be obvious when you call for information and a free demonstration today.

(415) 323-8195

DPX • 490 California Avenue
Palo Alto, CA 94306

CIRCLE 558 ON READER SERVICE CARD

COST ESTIMATING

PC-ESTIMATOR

Construction Cost Estimating and Bidding System.

Complete, easy-to-use, productivity software. Full registration system with cost database: \$89.00 Shareware: \$19.00.

PC-ADJUSTER

Insurance Claim Adjustment and Reporting System.

Comprehensive, stand-alone, supports depreciation. Includes cost database. Complete: \$99.00. Shareware: \$29.00.

S&H Add \$4.50. VISA, MC, Check, COD

**CPR, Inc., 3195 Adeline Street
Berkeley, CA 94703
(415) 654-8338**

CIRCLE 444 ON READER SERVICE CARD

Data Base

Data* designer

A complete, powerful database for home or business. Create/edit files fast. Design reports/mailling labels. Index, sort, query, search, Import dBase files. 50 field/million rec capacity. IBM/Comp, 512K, 5 1/4 drive, 2.1 DOS or later. \$49.95 + 2.25 sh. NY res. add stx.
Birchwood Software
PO Box 183
Hyde Park, NY 12538
(914) 473-3216

PC DATA ENTRY

Replace costly key-to-disk systems and create high-performance applications fast!

ENTRYPOINT

- Menu-driven
- Paint-the-screen format design
- Keyboard remapping
- Multiple export options
- Operator statistics
- LAN version
- Toll-free support hotline
- Award-winning manuals

DATALEX

1-800-962-8888
1-415-362-4466

EVALUATION SYSTEMS

FREE DEMO DISKS

**BUY
WITH
CONFIDENCE**

CATALOG

**SHOP
PC WORLD**

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Desktop Publishing

Quick, Easy Desktop Publishing. Try It Free.



See for yourself how quick and easy it is to produce great-looking newsletters, flyers and reports. PFS: First Publisher™ 3.0 from Software Publishing Corporation has all the features you need—including high-resolution fonts and images and an innovative Layout Gallery of 21 customizable layouts. Only \$149*

For your free trial disk, call 1-800-345-2888, operator 510.

SPC SOFTWARE PUBLISHING CORPORATION

*Suggested retail price. PFS and First Publisher are trademarks of Software Publishing Corporation. ©1990 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210

Educational

PC-Quizzer

Courseware Authoring System. Ideal for home & School. Ask Multiple Choice, True/False, Fill-in & K-type questions. Menu driven, Windows, Music, Speech, Color Text & Graphics. 256 colors on PS/2. Many other features. Improve Grades for only \$59. A Site license is available. \$3 s/h. MC/VISA.

Data Assist
651 Lakeview Plaza Blvd. Suite G
Columbus, Ohio 43085
614/ 888-8088

MATH EDITING

MathEdit lets you put

$$Z = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

into WordPerfect, Word, WordStar, & other documents **without learning any codes!**

- A display window lets you see your equation as you type it
- MathEdit is \$199

K-TALK COMMUNICATIONS
30 West First Ave. Ste. 100
Columbus, OH 43201
(614) 294-3535

CIRCLE 447 ON READER SERVICE CARD

SPANISH ASSISTANT™

Spanish Assistant 4.0 includes Translation Assistant™ to help you translate text from English to Spanish. It translates words, conjugates verbs, and more!

Also includes memory-resident grammar help, Random House® bilingual dictionaries, 2,000+ fully conjugated verbs, and an accent entry utility.

French, German, and Italian Assistants™ also available. \$79.95 each, plus \$4 shipping.

MICROTAC SOFTWARE
4655 Cass Street, Suite 214
San Diego, CA 92109
(800) 366-4170

CIRCLE 471 ON READER SERVICE CARD

GRADEBOOK III!

Easy; intuitive. 7 years service. Does everything;

- Excuses Absences
- Ranks
- Auto-averages
- Easy Edits
- 6 Grade Categories - You Pick
- Calculates Course Grades - Your Wts
- Reuses Rosters
- Password Option
- Gives 8 Report Types/86 Options
- And Much More!

Only \$49.50, S/W, Manual, Support; VISA/MC; CALL NOW!
Wren Software, Inc.
P.O. Box 1138 Dept. W
Castle Rock, CO 80104
303/660-0049

BS & MS in Comp Sci

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science & Master of Science in Computer Science at home. BS subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Proc., Data Struct. & Operating systems. MS includes SW Engineering, AI and other topics

American Inst. for Computer Sciences
1704-WO 11th Ave. So.
Birmingham, AL 35205
205/933-0339

Engineering

Simulation

GPSS/PC is a full-power version of GPSS, the most popular mainframe simulation language. Specifically designed for interactive use on today's high-speed microprocessors, it is loaded with features such as interactive graphics & animation. Using GPSS/PC, predict the behavior of complicated real-world systems. *Minuteman Software*
PO Box 171/W
Stow, MA 01775-0171
800/223-1430 x315, 508/897-5662 x315

Entertainment/ Games



Adult Software

Must State Age
Over 21

- Disk # 1** — An unbelievable visual encounter — MUST SEE !!
- Disk # 2** — An encounter game for friends and lovers.
- Disk # 3** — An anatomical arcade game with unusual animation.
- Disk # 4** — 2 more incredible visual encounters — impress your friends.
- Disk # 5** — Create your own Fantasies.
- Disk # 6** — View, print, or edit ten gorgeous pinups.

\$7 each, any 3 for \$17, or all 6 for \$32

for IBM and compatibles
CGA, EGA or VGA graphics reqd.
Add \$3 S/H — in OK add tax.
3.5" disks or foreign orders add \$2 per disc.

VISA/MC Orders only
800-243-1515 Ext. BD

Or check/MO to SeXXy Software, 2880 Bergey Rd.
Dept. 600BD Hatfield, PA 19440

THE BEST IN ADULT SOFTWARE FOR LESS!!

CIRCLE 523 ON READER SERVICE CARD

Sports Handicapping

\$\$WIN with horse racing & greyhound handicapping software \$32.95, \$52.95, \$67.95, \$77.95 each. Up to 17 entries analyzed: class, speed, times, odds, track, post, stretch, & finish. Pro Football, Baseball, Basketball Software-\$42.95. Handicap races & games in minutes. MC/VISA accepted. Free info.

SOFTWARE EXCHANGE
PO Box 5382-PW
W. Bloomfield, MI 48033
313/626-7208. Orders:
1-800/527-9467

NEW CASINO EXCITEMENT!

NOW AVAILABLE IN DAZZLING VGA/EGA GRAPHICS

New Casino Master brings the fast-paced suspense filled action of casino gambling to your PC with graphics to match your computer. Package includes five casino games and five selectable display options, including VGA, EGA, MCGA, CGA, and monochrome.

With thousands of satisfied customers, Centron is the leader in casino gambling software. Improve your chances of winning and have more fun at the casino. All games come with complete manuals including rules and betting strategy. Compatible with all PC/DOS and MS/DOS computers. Not copy protected.

- **Crapsmaster**
Play all Casino bets
- **Blackjack Ace**
Learn card counting
- **Roulette Master**
Animated wheel spin
- **Poker Master**
Casino-style Video Poker
- **Baccarat Master**
Learn the "high rollers" game

Previous buyers call for special upgrade price.



Send for Free Flyer or Call for order info Toll-Free:

1/800-848-2424

Centron Software, Inc.
7718 La Mirada Dr.
Boca Raton, FL 33433

CIRCLE 538 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Largest Selection

Adult Software

Must
State Age
Over 21



1990 Catalog \$5.00 Volume I \$11.95
M1 thru M-20 \$5.00 ea. Volume II \$11.95
Movies 1 thru 7 \$11.95 ea. Volume III \$16.95
For IBM PC Compatibles, No Shipping Charges AOS
3.5" and foreign add \$1. per disk P.O. Box 106-PCN
CT residents add 8% tax Marion, CT 06444
Send check or money order to:

CIRCLE 592 ON READER SERVICE CARD



Prepare to meet your NEMESIS™

Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game, Go is considered by many to be the secret of Japanese success. "the leading Go game for the Macintosh (or ... the IBM PC, for that matter)... Using it is an improvement over learning the game from books or from all but the most patient humans." "This is without question one of the most extraordinary automated aids to go instruction developed." Seiter, MacWorld 6/89

Toyogo, Inc.
(800) Toyogo-9

P. O. Box F, Dept. W, Kaneohe, Hawaii (808) 254-1166
\$79 NEMESIS Go Master, \$49 Joseki Tutor, \$59 Tactical Wizard+ \$6 US S&H

CIRCLE 565 ON READER SERVICE CARD



Actual Clip
Art Image

Graph-XXX

Hard drive
required

We've seen the rest... We're the BEST!

#001 Captivating "Mini Movies". Must see!!	\$9.95
#002 Hi-Res Color and B&W. Stunning on EGA or VGA.	\$9.95
#003 Celebrity Disk!! Your favorite adult stars.	\$9.95
#101 Our most popular combination!! Disks #001, #002 and #003	\$19.95

Requires IBM Compatible with CGA, EGA, or VGA
3.5" and foreign orders add \$1 per disk
Please include \$3 shipping and handling
Must state age over 18

STARWARE PUBLISHING CORPORATION
P.O. Box 340203
BOCA RATON, FL 33434
(407) 479-0588

CIRCLE 550 ON READER SERVICE CARD



HI-TECH LOTTO ANALYZER

Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and reports. Data is based on your state's winning number history, using hi-tech statistical methods. You update weekly. Min. 256K. Programs, manual, one state's data, \$44.95 + \$4.00 shipping and handling. Each additional state \$10.95. Credit card 800/992-4045, ext. 439; (CA) 800/777-8814, ext. 439. Check/M.O.:

The LOTTO EDGE, ODDS UNLIMITED,
P.O. Box 1223, Addison, IL 60101

PLAY TO WIN
LET YOUR PC DO THE WORK!

CIRCLE 549 ON READER SERVICE CARD

REACH
2.5 MILLION
BUYERS.

ADVERTISE IN
The PC World Catalog.

CALL 800-435-7766
In CA: 800-435-7760

Financial

When you must be accurate!

EXEC-AMORT™ Loan Amortizer Plus™ Software

for IBM-PC, AT, 386, PS2 series & compatibles

Adopted worldwide
by over 3000 Attorneys, CPA's and
over 1000 financial institutions!

- | | |
|---|---|
| ☐ Loan Amortizations | ☐ Easy to use menus |
| ☐ APR's that comply to US Regulation Z | ☐ 360, 365 or 360/365 day interest |
| ☐ 18 Digit Accuracy | ☐ Solve an Unknown |
| ☐ Fixed & Adjustable Interest Rates | ☐ Present Value |
| ☐ Irregular Payments | ☐ Future Value |
| ☐ Recurring extra payments, credits and fees | ☐ IRR |
| ☐ Balloon Payments | ☐ Yield & Loan Price |
| ☐ Points & Fees | ☐ User configurable rounding and defaults |
| ☐ Prepaid Interest | ☐ File store & retrieve |
| ☐ Long and short period interest | ☐ Great for client services |
| | ☐ Network, Site License and corporate versions are available |

Only \$149.95 + \$5 S&H.
Demo disk & manual available for \$30+\$5 S&H

ELECTROSONICS

36380 Garfield - #1, Fraser, Mich 48026

800/858-8448 or 313/791-0770

Check, Visa, MC, Amex & Discover are welcome.
COD order's add extra \$2.75

60 day money back guarantee!!

CIRCLE 526 ON READER SERVICE CARD

LOAN SOFTWARE

Lenders and Borrowers
since 1974

Loan accounting system.
Loan document tracking.
Consumer loan calculator.
Mortgage reduction strategies.
Small Business Loan Application.
Professional amortization system.

The amortization program of which COMPUTERS IN ACCOUNTING said, "PCLOAN is the best example of the hundreds of financial programs."

FREE CATALOG

Bottom Line Software

817-447-5524

CIRCLE 482 ON READER SERVICE CARD

Flow Charting

Windows Flowcharter

RFFlow is a professional drawing tool for flowcharts, data flows, org charts. (Requires Microsoft® Windows.) 75 shapes auto-adjust in size. Move, copy, delete groups of objects. 7 levels of zoom. Move flowcharts to other applications. Supports Windows printers, plotters, cartridge & soft fonts. Free trial disk.

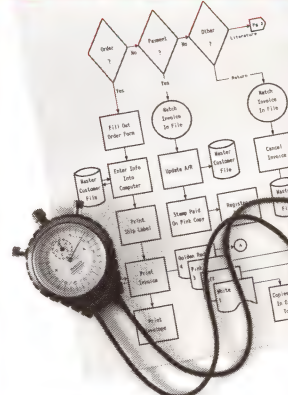
RFF Electronics

1053 Banyan Court

Loveland, CO 80538

303/663-5767 FAX: 303/669-4889

BY HAND. OR BY NOON.



Announcing Flow Charting™ 3:
Powerful new features—
for greater speed, flexibility,
and ease-of-use!

- Single-page, multi-page or canvas charts—portrait or landscape
- Custom fonts support high resolution laser and 24-pin dot matrix printers
- 35 standard shapes, 10 text fonts
- Suggested retail price: only \$250

PATTON & PATTON

Software Corporation

Excellence in charting the flow of ideas!

See your dealer today! Or, for a "live,"
interactive demo disk, call:
800-525-0082, ext. PW40.

International: 408-778-6557, ext. PW40.
485 Cochrane Circle, Morgan Hill, CA 95037-9932

CIRCLE 529 ON READER SERVICE CARD

Better Flowcharter

Know before you buy! *Easy-Flow* is the superb flowcharting program chosen by over 30,000 users, and very favorably reviewed in the March 10th 1987 issue of PC MAGAZINE. See the "Advertisers Index" under *HavenTree* to find our large display add in this issue.

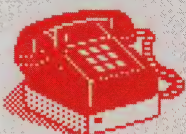
HavenTree Software Limited

Order Desk: 1-800-267-0668

Information: (613) 544-6035

CALL TODAY!

Greg Messina
East Coast Representative
1-800-435-7766



CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Genealogy

DO YOUR FAMILY TREE WITH GENE

A Program for Genealogy

- Runs at CPU speed on IBM comp. PCs. Also runs on as little as 256 Kb (like PC Jr.)
 - DOS memory allows 3800 individuals and 50 generations. Output on 8½x11" printer paper. Convertible to handsome scroll showing all generations.
 - GENE organizes and prompts user. Three tree outputs, including pedigree version. DOS or OS/2 with hard disk, including PCs without hard disk.
- \$59.95
PA residents add 6% sales tax
VISA/ MC

KEBTECH, BOX 6631
WYOMISSING, PA 19610

CIRCLE 596 ON READER SERVICE CARD

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address labels, searches, & much more. Call for FREE information. Satisfaction guaranteed. Any PC or compatible. MC/VISA/AmEx welcome.

QUINSEPT

Box 216

Lexington, MA 02173

800/637-ROOT, 617/641-2930

Draw it faster & easier with

PEP™ Picture
Editing
Package

The fastest drawing program

You can draw diagrams and illustrations of all sorts with full-featured PEP. Output PDL, PCX, or Postscript files. Compatible with many popular desktop publishing packages & word processors. PEP comes with a 30 day satisfaction guarantee, and too many features to list in this space; just call for full information. Only \$175.

Call 1-800-TRIONUM

CIRCLE 514 ON READER SERVICE CARD

Graphics

3 Free Slides from your PC

COMPUTER SLIDE EXPRESS
converts your graphic files into 4000 line full color slides, overheads or printouts. All popular programs supported. 24 hour service by modem or disk. As low as \$6.50. Call or FAX for your FREE valuable (\$27.00) coupon & FREE 48 page catalog.

Visual Horizons
180 Metro Park
Rochester, NY 14623
Phone: 716/424-5300
FAX: 716/424-5313

VGA ColorWorks™ V2.2

The most advanced paint package available for the VGA. ColorWorks brings studio-quality graphics to the PC with professional effects like image warping, transformations, blend, tint, cross-fades...much more. Over 150 adjustable drawing controls and 262,000 colors, all managed through a fully interactive menu. \$59. Free Demo

SPG Inc.
PO Box 171008
Hialeah, FL 33017
(305) 362-6602

Health



Analyze diets, menus & so much more!
This Top-rated software has the best database of any system on the market today. Used by schools-colleges-hospitals-homes-fitness centers & businesses. 2400 foods-30 nutrients. Send for **FREE DEMO DISK !!**

ESHA Research - PO Box 13028-B
Salem, OR 97309
Phone: (503)-585-6242

CIRCLE 573 ON READER SERVICE CARD

Inventory Control/Management

POINT OF SALE INVENTORY PROGRAM

\$ 89.50 - \$ 189.00

Inventory Control is....



MONEY IN THE BANK

Maintains Inventory

Writes Invoices

Supports Cash Drawer

Receipt Printer & Barcode

Call for Complete List

Freeman Software - Garland, Texas

800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

Home Use

INFOTRAK

INFO-TRAK, a new, menu driven, database/cataloguer program for the pro and the beginner. Ideal for business, home inventory, investments, collections. Features include SEARCH, add/delete lines, edit data, custom formats and more. IBM XT, AT & compatibles, DOS 2.0 or higher. (chk or money order) \$59.00, \$3 s/h. (NY res. add 7.5% tax)

JA-DAL TECHNOLOGIES
P.O. BOX 611
YAPHANK, N.Y. 11980

Mr. QuarterMaster

Providing the IC needs of business, govt. & institution stockrooms since 1983. Features include receipts & issues updating, report generation, issue slip, etc. Price \$140. Manual alone with demo: \$30 deductible toward later purchase. Also available: Sales reporting, PO, Estimating, Retail IC & Multi-whse IC systems.

RJL Systems
106 New Haven Avenue
Milford, CT 06460
203/878-0376

"THE COLLECTOR"™

Serving collectors since 1979. Stamp, Coin, Doll, Train, Antique, Gun, you name it, Collectors (and your insurance co.) will love it. Holds up to 225,000 items, all sorted alph/numeric, with cost/cur val at touch of key. For PC/PCjr/XT/AT/PS2 or similar (256k). Write/call for free brochure, or \$85+ \$3 s/h

The Third Rail
3377 Cimarron Dr.
Santa Ynez, CA 93460
(805) 688-7370

Stock-Master 4.0

This commercial grade, high performance inventory system for Mfrs has Stock Status Rptg, Trend Analysis, Purchase Order Tracking, QC Rptg, Transaction History Detail Analysis, Multiple Whse Locations, Bill of Materials & Purchase Order Writing. On minis since 1978, expanded/priced for micros. Demo avail.

Applied Micro Business Systems
177-F Riverside Ave.
Newport, CA 92663
714/759-0582

**REACH
2.5 MILLION
BUYERS.**

**ADVERTISE IN
The PC World Catalog.**

CALL
In CA: 800-435-7760

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Languages

FORTRAN

Features • Speed • Tools

LP77 — Full ANSI 77, Debugger, Editor for only \$99

F77L — The experts' choice for DOS 640K compilers

F77L-EM/32 — 32-bit compiler that breaks the 640K barrier

Lahey Computer Systems
P.O. Box 6091

Incline Village, NV 89450

Tel: 702 831-2500 Fax: 702 831-8123

800 548-4778

CIRCLE 552 ON READER SERVICE CARD

Laser Logos & Signatures

The KEY to personalizing your Documents: Unlock the Power of your KYOCERA and HP Series II or III. Automatically print your Letterhead, Logo or Signature. Custom Fonts & IC Cards.

This will gratify some people, & astonish the rest!

Mark Twain
Call for free samples. Satisfaction Guaranteed or your money back.

LogoMasters
(415) 388.FONT 354 Pine Hill Rd.
(415) 381.5546 FAX Mill Valley, CA 94941

CIRCLE 440 ON READER SERVICE CARD

YOURS FREE!

How to Manage Your Mailing List. Discover how you can professionally manage your consumer or business-to-business mailing list on your IBM PC or compatible PC with 640K RAM and hard drive - and save money on your mailings - with **ArcList** and **AccuMail**, two powerful, easy-to-use programs that offer you: address correction and standardization * duplicate recognition * list merge/purge * postal presorts * file maintenance * label design and printing * "Nth Name" testing * complete data security * and more. **ArcList** and **AccuMail** can help you boost your mailing list's integrity, deliverability, and performance! To get your FREE BROCHURE, call: TOLL FREE 800-368-5806 or write:

Group 1 Software, Inc.
Washington Capital Office
6404 Ivy Lane, Dept. PCW-90
Greenbelt, MD 20770-1400

CIRCLE 432 ON READER SERVICE CARD

Manufacturing

Manufacturing Inventory

Integrated inventory control, bills of material, and purchase order processing. Ideal for small- to medium-sized manufacturing firms. Powerful, yet easy to learn, easy to run. Over 3,000 installed. Just \$1495 with special money-back guaranty! Comprehensive Demo Disk (\$5 ppd) prints sample reports.

Microcomputer Specialists, Inc.
P.O. Box 795
Woodstock, VT 05091
800/833-1500, 800/457-4600

Medical

Medical Systems with ECS

PPM offers a complt. line of med. SW from simple ins. claims proc. to comprh. A/R mgt.

PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar.

THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats.

CLAIM NET - Nationwide elctrcnrc claims clearinghse transmits to 100+ ins. carriers. SW starts at \$459. Dealer inquiries welcome.

Physicians Practice Management
350 E. New York
Indianapolis, IN 46204
800/428-3515, 317/634-8080

Laser Fonts

\$1.50 FONTS

HP compatible soft fonts for your laser printer. Dozens of type styles, logos, digitized images & custom fonts available.

- Fixed & Proportional
- Portrait & Landscape
- Regular-Bold-Italic-Italic Bold
- Point sizes-6 to 108

For FREE catalog, contact:

EAGLE SYSTEMS

PO Box 502

Moorpark, CA 93021

805/529-6992

ZIPCODE DIRECTORY ON DISK

Compatible with most database manager and Mailing list software. Use ZIPLIST to automate look up of zip-code, city, state and county information for mailing list, order entry, payroll or other programs. Save time and money while improving accuracy.

Available in most disk and tape formats. To order ZIPLIST or for additional information call toll free at:

1-800-431-2257

DCC DATA SERVICE, INC.
1200 18th St. N.W. Ste. 704
Wash., D.C. 20036 • 202-452-1419

CIRCLE 403 ON READER SERVICE CARD

Mailing List Programs

Today's PC Mail System

Fast! Accurate! Large volume mailers use PostWare software programs to:

- Standardize/correct addresses
- Add ZIP, ZIP + 4, Car. Rt.
- Presort 1/2/3 Class
- Detect duplicates
- Generate Postnet bar codes
- Palletize 2/3 Class
- Qualify for postal discounts

CASS-Certified. Reported throughputs over 100,000/hr.

Postalsoft, Inc.

4439 Mormon Coulee Rd.

La Crosse, WI 54601-8231

800/831-6245

MAIL ORDER MASTER

Software contains all routines necessary for Home Mail Order Business. Easy to use features include Invoicing, UPS Manifest, Powerful Database, Daily Report, Statements, Credit Card Printout, Inventory Control, Bulk Mail Sort plus lots more. IBM compatible Priced at \$299

Call/write for Demo at \$10.00

The Marshall Weiner Corp.

1700 Catalina Ave.

Seal Beach, CA 90740

800/874-4656 or 800/874-2827 in CA

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.

Penguin Computer Consultants
PO Box 20485

San Jose, CA 95160

408/997-7703, Fax: 408/927-0570

Music

\$1995 Test Drive



Don't buy any PC MIDI products before trying the full-line from the industry leader. It's a risk-free way to learn about PC music. Apply the cost if you buy software from us.

Voyetra
Dept. PCD, 333 5th Ave
Pelham, New York 10803
(914) 738-4500 Fax: (914) 738-6946

Orders/Free Catalog: 1-800-233-9377

CIRCLE 476 ON READER SERVICE CARD

BUY WITH CONFIDENCE

CATALOG
SHOP PC WORLD

CATALOG

Shop The PC World Catalog for fast solutions to your PC needs.

SongWright V

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract, import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI or SMF entry & playback. Matrix/laser printers. \$99.95 + \$5 s/h. Free sample output.
SONGWRIGHT SOFTWARE
7 Loudoun Street, S.E., Ste. 5B
Leesburg, VA 22075
(703) 777-7232

Make Music

with your computer! Find out how you can record and play music, compose, notate and learn to play your favorite songs on your personal computer. It's easy and fun. Call or write for free catalog of MIDI products:
Passport Designs
Dept. B, 625 Miramontes
Half Moon Bay, CA 94019
415/726-0280

Networking

The \$25 Network

Try the 1st truly low cost LAN

- Connect 2 or 3 PCs, XT's, AT's, PS/2's
- Uses serial ports and null modem cable
- Runs at 115K baud, in only 15k of ram
- Runs in background, totally transparent
- Share any device, any file, any time
- \$25/network, Not Node! Version 2.3m

Skeptical? We make believers!



Information Modes
Drawer F, Denton, TX 76202
817-387-3339 Technical
1-800-628-7992 Orders

CIRCLE 407 ON READER SERVICE CARD

Public Domain/ Shareware



SOFTSHOPPE, INC.

- Selected Programs
- Latest Versions
- As Low as \$1.50
- Same Day Shipping
- No Minimum Order

FREE CATALOG
IBM PD/SHAREWARE

Call 800-829-BEST (2378)
Fax 313-761-7639

CIRCLE 436 ON READER SERVICE CARD

IBM PC[®] COMPATIBLES FREE CATALOG

112 PAGES!
Software, Ribbons,
Labels, Books, Etc.

Best Bits & Bytes
P.O. Box 8225-W
Van Nuys, CA 91409

CALL NOW!
TOLL FREE-24 HRS.
1-800-245-BYTE
FOREIGN ORDERS ADD \$4.00 FOR SHIPPING

CIRCLE 576 ON READER SERVICE CARD

PUBLIC DOMAIN/SHAREWARE
GREAT PROGRAMS
ON 5.25" & 3.5" FORMATS

FREE CATALOG
SPECIAL OFFER
AS LOW AS

99¢ PER DISK

NO MINIMUM ORDER

WRITE TO:
JANE SOFTWARE
8964 EMERSON
DES PLAINES, IL 60016

CIRCLE 500 ON READER SERVICE CARD

MegaBytes-Not MegaBucks!

Latest Versions of Virus-Free Software

25 Megabytes \$29	150 Megabytes \$199
50 Megabytes \$79	175 Megabytes \$229
75 Megabytes \$119	200 Megabytes \$319
100 Megabytes \$159	225 Megabytes \$359
125 Megabytes \$199	250 Megabytes \$399

Why buy only one program per disk when you can get HUNDREDS of quality programs per order from our Shareware direct from the Net. Our SHAREWARE AUTHORS GREAT! Dups on HD disks. Add \$3.00 post/hand for each Meg inc. in AMERICA. Add \$6.00/25 Meg inc. for 1.44 disk. Add \$6.00/25 Meg inc. for 1.44 disk. OK residents add 7% sales tax. Utility disk w/ catalog \$10.00 Refundable with 1st order.

24 HOUR ORDER LINE
1-800-876-8496
SHARENET
Tech. Assistance/Info (405) 524-7489
POB 12368, Dept. I • Okla. City, OK 73157

CIRCLE 511 ON READER SERVICE CARD

FREE SOFTWARE

Monthly, 5 disks with 10+ latest programs plus catalog FREE! Join today for only \$14.95 annual membership fee and get 5/5.25" disks full of software - FREE! Pay only \$5.00 shipping/handling. (or 3/3.5" disks for \$6.95 + s/h)
VISA/MC/AMEX ONLY
SOFTWARE of the MONTH CLUB
511 ENCINITAS BLVD. STE 104
ENCINITAS, CA. 92024
ORDER TODAY
619 942-9939

CIRCLE 420 ON READER SERVICE CARD

\$1.50 PER DISK! [Buy 1 or 100] Best IBM Shareware and Public Domain SOFTWARE

FREE CATALOG
(203) 745-5322
 
**BRIGHT FUTURES
INCORPORATED**
P.O. Box 1030, East Windsor, CT 06088

CIRCLE 453 ON READER SERVICE CARD

15 FULL DISKS - FREE SOFTWARE FOR IBM[®] COMPUTERS

TRY US! 15/5.25" or 6/3.5" disks full of our best sellers - FREE! Games, Business, Education, Graphics, Utilities, Finance, Desktop publishing, more.
PAY ONLY \$5.00 FOR SHIPPING

SATISFACTION GUARANTEED!

INTERNATIONAL SOFTWARE LIBRARY
ORDER TODAY - CALL
619 942-9998
since 1985 

CIRCLE 585 ON READER SERVICE CARD

Shareware News

Keep up with the latest and best public domain & shareware.

PSL NEWS - Since 1984

The only monthly shareware magazine. \$18/year.

Call for a free issue -

1-800-242-4PSL

P. O. Box 35705 - pcr
Houston, TX 77235
1-713-665-7017



Public software
Library

CIRCLE 503 ON READER SERVICE CARD

FREE IBM SOFTWARE CATALOG

CRANSTON SOFTWARE

P.O. BOX 2679

MINNEAPOLIS, MN

55402-0679

CALL NOW

1-800-321-4270

FAX: (612) 332-6216

CIRCLE 587 ON READER SERVICE CARD

PROGRAMMER'S SHAREWARE & MORE Toll Free Ordering for USA 800/327-2540 FREE SHIPPING

\$3.50 per disk. 10 or more, \$3.00 per disk. 3.5" format, add \$1.00 per disk. 126 Atari ST CAT AV.
Integrated Basic Compiler (LB08) Full environment: Edit, Compile, Debug and Run all within the environment. On Line Help. Much like QuickBASIC™.
4DOS (UT32) VASTLY Improved DOS COMMAND.COM replacement.
Windows Boss (2 disks) (LC07ALC07B) Windows, Pull Down & Pop Up Menus, Data Entry etc. Supports Turbo C, Microsoft & others.
Programmer's Reference Disk (UT30) Huge amounts of valuable reference.
DeSmet C Compiler (LC15) Full C Compiler, Linker, Assembler! Complete C! First Full C Compiler in Shareware!

Computer Solutions/N.W. • P.O. Box 446, Benzonla, MI 49616 • Info: 1-616/325-2450 FAX: 1-616/325-2505 • FREE 64 pg. Catalog

CIRCLE 590 ON READER SERVICE CARD

HOT NEW SHAREWARE!

Language Sets

Each disk in these sets is achieved with over 700K of utilities, toolkits, libraries, graphics & windowing support etc. All include necessary documentation and most include source code!

- (C LIB) Microsoft & Turbo C • over 4.5 Meg • 7 disks • \$20
- (DBASE) dBASE III+ Library • over 4.5 Meg • 7 disks • \$20
- (ASEM) Assembler Library • over 5.0 Meg • 7 disks • \$20
- (BASIO) Turbo & Quick BASIC • over 3.0 Meg • 5 disks • \$15



CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

\$1.25 - IBM PC 5.25" Disks LIMITED TIME! FREE CATALOG!

MOST NEED 512K RAM:	1165 ProComm (modem)	1300-1301 Fractint Fractals CGA
1009 Automen	1177 Flu-Shot+	1319 SKY-VIEW Planetarium CGA
1014-1017 PC-Write	1178 Virus Scan	1323-1327 SCRIPTURE - Entire
1025 Pianoman	1187 PKZIP/PKUNZIP	KJV Bible/Concordance (Harddisk)
1073 Flags (CGA)	1190 Bradford Printing Utility	1361-1364 Wisdom of the Ages
1074 WORLD29 Maps CGA	1191-1192 ImagePrint	Shareware requires additional payment to authors if found useful.
1077 Planets (Here/CGA)	1246 Super VGA Demos	APPROVED ASP DISTRIBUTOR
1086 TUTOR.COM	1266-1267 Typesetter PC	Shipping: US \$3.50, Can \$5.50
1087 PC-LEARN	1279 4DOS DOS replacement	(For COD Delivery add \$3.50)
1104 Thesaur Plus	1285 LZEXE - Squeeze programs	Check or Money Order (US \$)
1126-1127 Zoomracks II	1294-1299 Clip Art: New/Old	Phone/FAX: (614)-459-2448
1130 ZIPKEY ZIP Codes	Printshop, Printmaster, 1st Pub	

AccuSoft PD & Shareware - P.O. Box 02214, Dept. 4 - Columbus OH 43202

CIRCLE 507 ON READER SERVICE CARD

Property Management

Rental-Ease. State of the art software. Extremely fast and easy to learn and use. Everything is included: tenant tracking, repairs and maintenance, income and expense, check writing and recurring bills. No extra modules to buy. The ultimate in property management. \$695 complete. Free brochure, Demo \$10.

Strategic Office Systems
688 North 500 West #61
Mt. Pleasant, UT 84647
800/942-6784 or 801/462-2130

Security



**FIGHT
PIRACY
&
PROTECT
YOUR
PROGRAM
\$\$\$'s!**

Since 1986, companies worldwide have been choosing Az-Tech security products. If you demand the strongest protection available, why not choose one of these "proven leaders":

- EVERLOCK Copy Protection
- EVERTRAK Software Security
- EVERKEY Hardware "Key" Software Security

For IBM and Compatibles.
30 day money back guarantee.
Free info and demo disk available.



Az-Tech Software, Inc.
305 East Franklin
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 593 ON READER SERVICE CARD

Project Management

GREATT GANTTS!

Frustrated with slow, limited, or cumbersome gantt charting programs? GREATT GANTTS is a fast powerful, and versatile gantt chart generator for schedules, program mgmt, and more.

- * Selectable options, sorting
- * Displays 1 mo to 20 yrs on screen width
- * Rapid charting, editing, scaling
- * Flexible, easy to use

PC's \$99. Demo disk \$5.

InverComp Software
12116 Greenway Ct, Suite 301
Fairfax, VA 22033
(703) 591-5395

Property Managers

Easy-to-use software:

- Rental Manager — general purpose acting for apartments, storage units, etc. Built-in gen. ledger.
- Condo Manager — for community associations. Member payments & charges. Accounting reports.
- Resort Manager — for units rented on behalf of many owners. Timeshare, reservations, statements.

Coleman Business Systems
3654 Arcadian Drive
Castro Valley, CA 94546
415/581-7125

Property Management

Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-\$495, Deluxe PM for professional management-\$1,195, Multi-User with Novell network compatibility-\$2,395. Includes check writing, recurring expenses, G/L, management reporting.

Yardi Systems, Inc.
813 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Property Management

Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/RESIDENTIAL/CONDOMINIUM/HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call: Realty Automation, Inc.
11365 Eastshore Drive
Hayden Lake, ID 83835
208-772-3259

Real Estate

• Property Mgt Plus/90 •

New version which looks up tenants & posts rent by Tenant Name. Prints.. Bank Deposit Slips, Rent Statements, & Automatic Checks. Reports.. Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use! Special pricing from \$575.

Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
213/372-9419

Restaurant/ Management



MenuManager

Finally! The perfect restaurant food cost control system.

- Easy to use IBM Compatible Software that develops:
- Standardized recipes priced to the penny
 - Inventory Data Collection Forms
 - Inventory reports outlining product usage by ingredient, inventory turnover and food cost percentage
 - Comprehensive Menu Analysis
 - Detailed and Summary waste reports outlining actual vs. theoretical usage by raw ingredient

Increase Control! Save Time!
Only \$299.00

MenuManager is developed by the Fisher Hospitality Group Inc.,
Management Consultants to the Foodservice Industry.
171 St. Clements Avenue
Toronto, Ontario M4R 1H1
• 416-485-5310 •
Demo and Manual - \$30 deductible from purchase price.

CIRCLE 581 ON READER SERVICE CARD

FREE MARKETING INFORMATION

Call your PC WORLD
representative
for actual response
numbers our
advertisers have received
in your Category.

**See how well the
CATALOG performs.**



800-435-7766
800-435-7760 in CA

Statistics

NCSS 5.x Series - \$125

Easy-to-use menus & spread sheet. Multiple regression. T-tests. ANOVA (up to 10 factors, rep. measures, covariance). Forecasting, Factor, cluster & discriminant analysis. Nonparametrics. Cross Tabulation. Graphics: histograms, box, scatter, etc. Reads ASCII/Lotus. Many new add-on modules.

NCSS
865 East 400 North
Kaysville, UT 84037
Phone: 801-546-0445
Fax: 801-546-3907

StatPlan IV

Only \$179. Easiest to use statistics program available. Statistics include: curve fitting, crosstabs, correlation, multiple regression, stepwise regression, ANOVA, t-tests, time-series analysis, etc. Graphics with printer/plotter output. Handles up to 30,000 data points. Interfaces directly with Lotus and ASCII files. Demo \$10.
The Futures Group
76 Eastern Boulevard
Glastonbury, CT 06033
203/633-3501

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Statistics

Power Designed to Fit Your Needs

MINITAB is the easy-to-use statistical package that lets you master a broad range of functions within one hour.

- Basic Statistics
- Regression
- Control Charts for SPC
- Hi-Res Graphics
- Time Series
- ANOVA and ANCOVA
- ...and more

CALL 800-448-3555

MINITAB
STATISTICAL SOFTWARE

Minitab Inc.
3081 Enterprise Drive / State College, PA 16801

CIRCLE 566 ON READER SERVICE CARD

Taxes

W2/1099 Software

Major companies and CPA's rate our software tops! Create forms on HP LaserJet or use any preprinted forms. Creates IRS ready diskettes.

Convenient data entry or import from any other software. W2 & all 1099's.

Easy to learn & use - great support! (Programmers - ask about our Laser Forms Toolbox!) \$129.00

Newport Wave Software

10 Savannah

Irvine, CA 92720

(800) 999-2611 (714) 544-1099

Utilities

Shell Your ZIPPER!

Stereo Shell makes compressing files a fast, simple process that will save you money. It is a DOS shell featuring an advanced, menu driven interface to the industry standard ZIP, ARC, LZH & PAK file compression programs. Our disk includes a shareware version of PKZIP and our own E88 text editor! \$29.95 shipped. (MS-DOS)

VISA/MC/PO/CHECK

M.R.E. Software!

P.O. Box 131

Ethelsville, AL 35461

(205) 658-2611

Surveys

The Survey System

A complete, easy-to-learn package for the entry, editing, processing & presentation of questionnaire data. Produces banner format crosstabs & related tables, statistics (incl. regression) & bar charts. Also codes & reports open-ends. All reports are camera-ready. CRT interviewing option available.

Creative Research Systems
15 Lone Oak Ctr., Dept. W
Petaluma, CA 94952
707/765-1001

Ammunition to conquer your biggest problems!

without V-EMM
(640 kilobytes)



- The Virtual Expanded Memory Manager provides your EMS applications with up to thirty-two megabytes of LIM EMS 4.0 expanded memory.
- It turns PC/AT or PS/2 extended memory into expanded memory.
- It turns hard disk storage into expanded memory.
- It's compatible with most EMS applications, including 1-2-3.
- Only \$89.95. 30-day money-back guarantee.

V-EMM

Fort's Software
P. O. Box 1295
Loveland, CO 80539
(303) 663-5629



CIRCLE 551 ON READER SERVICE CARD

It's 3 A.M. — what is your PC doing?

Probably nothing. But it could be working for you.

While you sleep, your computer could:

- ✓ Run unattended Network Backups
- ✓ Initiate Communications Sessions
- ✓ Print Lengthy Reports
- ✓ Execute Batch Files
- ✓ Run any Time-Consuming Task

For Demo call 1-800-283-4758, ask for disk #2040 (\$10, credited toward purchase)

The Pendulum Group, Inc. • 333 W. Hampden Avenue, Suite 1015 • Englewood, CO 80110 • (303) 781-0575

CIRCLE 405 ON READER SERVICE CARD

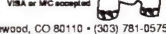
Auto-Might™ simulates you typing at the keyboard, feeding keystrokes to the system at a time you desire. The leader in unattended processing, Auto-Might is "perfect as a way to run a series of time-consuming tasks at 3 o'clock in the morning."



John C. Overak, PC Magazine, 8/2/88

Auto-Might never forgets to do an important task.

\$990 + s/h
VISA or MC accepted



Opt-Tech Sort/Merge 4.0

Extremely fast Sort/Merge program. Run as a DOS command or CALL as a subroutine. Unlimited filesizes, most languages, datatypes & filetypes supported including Btrieve & dBASE. Advanced features include record selection, record reformatting & much more! Call or write for more info. MS-DOS \$149, OS/2, Xenix, Unix \$249.

Opt-Tech Data Processing

PO Box 678

Zephyr Cove, NV 89448

702/588-3737

COPYWRITE

CopyWrite

Removes

Copy Protection.

No more diskettes,

manuals or code

wheels. \$75. U.S.

1000's of products copied.

Quaid Software Limited

45 Charles St. E. 3rd Fl. Dept. W

Toronto, Ontario M4Y 1S2

416/961-8243, FAX 416/961-6448

Windows

EZ-COPY

+, Duplicates Disks Fast!

• 2X+ faster than DOS • Read diskette once, then • Quickly, accurately mass duplicate 5.25" & 3.5" disks (360K, 720K, 1.2M, 1.44M) on your own PC/XT/AT/etc. • Supports up to 4 drives with automatic start and switching. • Formats, copies, verifies, etc. • Faster partial copies too. • Even faster with pre-formatted disks. • Serializes disks and/or labels, in 1 smooth operation. • Save disk images to HD, more... • Replaces hardware worth \$1000s.

Only \$495 +s/h NCP, for up to 10 mach.

Info: 917 Oakgrove, Houston, TX 77058

Info: 713.280.9900 • BBS: 8180 • FAX: 0525

Orders (D,M,V,X), Catalog Toll Free

1-800-359-953-9 ext. W1090

CIRCLE 589 ON READER SERVICE CARD

PALSOFT - WINDOWS

Windows Spell \$95.00

Spell checker for PageMaker, Excel, Write, Designer, Graph Plus and more.

Windows Filer \$195.00

Flat data base that incorporates graphics and text into the data base.

WinText \$195.00

Windows based full function word processor.

Palsoft

4455 S. Padre Island Dr. Ste 43
Corpus Christi, TX 78411
(512) 854-8788 Fax (512) 853-1541



CIRCLE 486 ON READER SERVICE CARD

REACH 2.5 MILLION SHOPPERS IN A SINGLE COLUMN!

With 2.1 million readers picking up PC World every month, there's no easier, faster, and more economical way to get your message across than to advertise in The PC World Catalog. Call us now and start getting your share of this valuable market!

CATALOG

Place Your Ad in
The PC World Catalog
Today... Call

800-435-7766

In CA: 800-435-7760

Advertiser Index A to Z

Get more information—
circle the appropriate
number on the reader
service card.

Reader Service Number	Page Number
11 Acco Int'l.	54
3 Acer America Corp.	246
22 ALR	12-13
— ALpc, Inc.	315
7 Alpha Software Corp.	46
306 American Small Business Systems	129
— Anthro Corp.	82
6 Application Techniques, Inc.	263
— Arlington Computer Products	333
18 Artisoft	14
— Ashton Tate	53, 76-77, 107
302 ATI	121
9 A.C.T. Corp.	269
32 BASF Systems Corp.	268

Reader Service Number	Page Number
— Bell Atlantic Corp.	216
25 Bitstream	201
40 Black Orchid Software	42
1 Blackship Computer Systems ..	74
16 Bourbaki, Inc.	82
13 Brothers Electronics	318
86 Brown Wagh Publishing	148
87 Brown Wagh Publishing	55
215 Buffalo Products	95
24 Bulldog Computer Products	320-321
17 Caere Corp.	249
21 Caere Corp.	227A-227B
42 Calera Recognition Systems ..	261
49 Canon U.S.A., Inc.	8-9
50 Canon U.S.A., Inc.	23
47 Canon U.S.A., Inc.	51
29 Charles Schwab & Co.	273
28 Chronologic Corp.	239
91 Citizen America Corp.	270
36 Clarion Software	234
38 CMS Enhancements	162
— Compaq Computer Corp.	17-20, 110-111
26 CompuLynk	331
33 CompuServe	198
39 Computer Associates	169
49 Computer Book Club, The	197

Reader Service Number	Page Number
213 Computer Direct	330
200 Computer Discount Warehouse	323
— CONNEXPERTS	36
48 Corel Systems	170
53 CTA, Inc.	244
— Curtis	26, C5
208 DAC Software, Inc.	229
94 DAC Software, Inc.	99
— Damark Int'l.	309
277 Datastorm Technologies	52
66 Dauphin Technology	157
74 Dell Computer Corp.	C6
318 Dell Computer Corp.	57-68
67 Delphi	322
51 Digital Research, Inc.	150
— Dow Jones Information Services	285
113 Elite Business Applications ...	158
— Epson	44-45
73 Everex	92
69 Everex	127
93 Evolution Computing	238
100 Fast Micro	131-135
81 Fifth Generation Systems	75
71 Fifth Generation Systems	112
84 Finalsoft Corp.	279
153 Formworx	22
56 Fox Software	147

Reader Service Number	Page Number
80 Funckey Enterprises	272
148 Funk Software	143
60 Funk Software	166
63 Galacticom, Inc.	30-31
— Gateway 2000	37-40D
133 GE Information Services	274-275
61 Golden Bow Systems	257
111 Good Software	284
79 Haventree Software	32
— Hewlett Packard	72-73, 79
90 Hyundai Electronics America	48-49
108 IBM	224-225
— IBM	43
109 Intel Corp.	117, 119
121 Int'l. Tele-Video Marketing, Inc.	336
— I.S.C.	310-311
41 Kenosha Computer Center ...	327
— L A Trade	334
126 Lexpertise USA, Inc.	256
2 Logitech	5
— Lotus	24-25, 217A-217B
162 Magee Enterprises	236
169 Manzanita Software	56
— Maxell	243
120 Maynard Electronics	251

PC WORLD

TAKING CARE OF BUSINESS

THE PC WORLD SUBSCRIBER HOTLINE

Do you have a subscription problem that needs attention?
Are you moving? Have an address change? Do you need
to check your expiration date?

For the fastest service simply call our toll-free subscriber
hotline: 1-800-234-3498 between the hours of 6:00 AM and
8:00 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

Reader Service Number	Page Number
— McGraw-Hill Schools (NRI) . . .	233
118 Meca Ventures	161
217 Merritt Computer Products . . .	232
166 Micca Soft, Inc.	70
195 Micro Professionals	314
168 Microbiz Corp.	337
167 Microlytics, Inc.	236
— Microsoft	33-35
315 Microsphere, Inc.	322
191 Microway, Inc.	245
172 MIS Computer Systems	97
7 M-USA Business Systems, Inc.	283
187 NEC Home Electronics . . . C2-P1	
— NEC Information Systems . . .	108
241 Newbridge Communications, Inc.	217
— Octagon	326
— On-Line Stores	332
222 Para Systems, Inc.	250
198 PC Brand, Inc.	179-186
— PC Connection	202-207
230 PC Sig	78
144 Peachtree Software	267
203 Peter Norton Computing	264
205 Powercard Supply	4, 6
224 Printers Plus	322
202 QMS, Inc.	144
— Quarterdeck	187
— Quill Corp.	165
229 Reasonable Solutions	313
239 Rose Electronics	258
125 RP Systems	324
338 Samna Corp.	276
31 Secure-It	232
— Sitka Corp.	28
236 Softklone	10
23 Softlogic Solutions	104
304 Software Directions	200
297 Software Excitement	319
31 Software Publishing	115
— Software Publishing	177
269 Sony Magnetic Products . . .	102-103
258 SourceMate	280
253 SPSS	226
— Star West	325
— Sun Moon Star	80-81
326 3M	47
284 Tandy/Radio Shack	255
178 Telemart	328-329
— Texas Instruments	7
259 Tiger Software	83-91, 230
260 Timeworks	29
283 Trident Microsystems	262
— United Computer Express . . .	335
289 Unitex	316-317
343 Ventura Software, Inc.	252
286 Virgin Mastertronic	235
325 Western Telematic, Inc.	71
— Wordperfect Corp.	240
340 X-Tree	123
290 Zenith Data Systems	125
206 Z-Soft Corporation	237

Advertiser Index by Product Category

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
-----------------------	-------------

HARDWARE

Boards/Cards/Chips

302 ATI Technologies	121
38 CMS Enhancements	162
191 Microway, Inc.	245
283 Trident Microsystems	262

Communications

11 Acco Int'l.	54
73 Everex	92
63 Galaticomm, Inc.	30-31

Computers

3 Acer America Corp.	246
22 ALR	12-13
1 Blackship Computer Systems . .	74
13 Brothers Electronics	318
— Compaq Computer Corp.	17-20, 110-111
26 CompuLynk	331
33 Compuserve	198
66 Dauphin Technology	157
318 Dell Computer Corp.	57-68
74 Dell Computer Corp.	C6
100 Fast Micro	131-135
— Gateway 2000	37-40D
90 Hyundai Electronics America	48-49
108 IBM	224-225
109 Intel Corp.	117, 119
121 Int'l. Tele-Video Marketing, Inc.	336
168 Microbiz Corp.	337
172 MIS Computer Systems	97
198 PC Brand, Inc.	179-186
— Quill Corp.	165
— Sun Moon Star	80-81
284 Tandy/Radio Shack	255
178 Telemart	328-329
— Texas Instruments	7
290 Zenith Data Systems	125

Connectivity

— CONNEXPERTS	36
239 Rose Electronics	258
325 Western Telematic, Inc.	71

Input Devices

2 Logitech	5
----------------------	---

Local Area Networks

18 Artisoft	14
215 Buffalo Products	95

Reader Service Number	Page Number
— CONNEXPERTS	36
239 Rose Electronics	258
Monitors	
187 NEC Home Electronics . . . C2-P1	
Motherboards	
9 A.C.T. Corp.	269
Music	
86 Brown Wagh Publishing	148
Other	
222 Para Systems, Inc.	250
Power Protection	
— Curtis	C52
205 Powercard Supply	4, 6
Printers/Plotters	
6 Application Techniques, Inc. . .	263
49 Canon U.S.A., Inc.	8-9
50 Canon U.S.A., Inc.	23
47 Canon U.S.A., Inc.	51
91 Citizen America Corp.	270
— Hewlett Packard	72-73, 79
— NEC Information Systems . . .	108
202 QMS, Inc.	144
Scanners/Digitizers	
21 Caere Corp.	227A-227B
17 Caere Corp.	249
42 Calera Recognition Systems . .	261
— Epson	44-45
Storage Devices	
38 CMS Enhancements	162
69 Everex	127
120 Maynard Electronics	251
Systems	
22 ALR	12-13
289 Unitex	316-317
SOFTWARE	
Accounting/Financial	
29 Charles Schwab & Co.	273
39 Computer Associates	169
94 DAC Software, Inc.	99
208 DAC Software, Inc.	229
111 Good Software	284
— IBM	43
169 Manzanita Software	56
118 Meca Ventures	161
166 Micca Soft, Inc.	70
168 Microbiz Corp.	337
7 M-USA Business Systems, Inc.	283
144 Peachtree Software	267
258 SourceMate	280
286 Virgin Mastertronic	235
CAD/CAM	
306 American Small Business Systems	129
93 Evolution Computing	238
Communications	
277 Datastorm Technologies	52
63 Galaticomm, Inc.	30-31
236 Softklone	10
Database Management	
37 Alpha Software Corp.	46

Reader Service Number	Page Number
— Ashton Tate	76-77
36 Clarion Software	234
56 Fox Software	147
Desktop Publishing	
48 Corel Systems	170
153 Formworx	22
260 Timeworks	29
343 Ventura Software, Inc.	252
206 Z-Soft	237
Education	
— McGraw-Hill Schools (NRI) . .	233
Entertainment	
16 Bourbaki, Inc.	82
Fontware	
25 Bitstream	201
113 Elite Business Applications . .	158
Graphics	
— Ashton Tate	53
93 Evolution Computing	238
— Software Publishing	177
— Wordperfect Corp.	240
Local Area Networks	
18 Artisoft	14
— Sitka Corp.	28
Management	
286 Virgin Mastertronic	235
Operating Systems	
51 Digital Research, Inc.	150
Optical Character Recognition	
53 CTA, Inc.	244
Other	
— Lotus	24-25
167 Microlytics, Inc.	236
— Star West	325
Project Management	
28 Chronologic Corp.	239
79 Haventree Software	32
Shareware	
230 PC Sig	78
229 Reasonable Solutions	313
297 Software Excitement	319
Spreadsheets/Templates/Forms	
— Lotus	217A-217B
Statistics	
253 SPSS	226
Utilities	
6 Application Techniques, Inc. . .	263
— Ashton Tate	107
28 Chronologic Corp.	239
81 Fifth Generation Systems . . .	75
71 Fifth Generation Systems . . .	112
84 Finalsoft Corp.	279
60 Funk Software	166
148 Funk Software	143
61 Golden Bow Systems	257
162 Magee Enterprises	236
203 Peter Norton Computing	264
23 Softlogic Solutions	104
304 Software Directions	200
259 Tiger Software	83-91, 230

FREE PRODUCT INFORMATION

PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP (required) _____

TITLE _____ PHONE () _____

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to **PC WORLD**. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

Oct. 1990

Expires 02/15/91

N1

Free Product Information

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Free Product
Information

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871



FREE PRODUCT INFORMATION

PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP (required) _____

TITLE _____ PHONE () _____

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

Reader Service Number	Page Number
340 X-Tree	123
Windows	
— Bell Atlantic Corp.	216
40 Black Orchid Software	42
— Microsoft	33-35
— Quarterdeck	187
338 Samna Corp.	276
Word Processing/Aids	
87 Brown Wagh Publishing	55
126 Lexpertise	256
326 3M.....	47
338 Samna Corp.	276
31 Software Publishing	115
MISCELLANEOUS	
Computer Accessories	
— Anthro Corp.	82
— Curtis	26
80 Funckey Enterprises	272
217 Merritt Computer Products ..	232
Mail Order	
— ALpc, Inc.	315
— Arlington Computer Products	333
9 A.C.T. Corp.	269
13 Brothers Electronics	318
24 Bulldog Computer Products	320-321
26 CompuLynk	331
213 Computer Direct	330
200 Computer Discount Warehouse	323
— Damark Int'l.	309
100 Fast Micro	131-135
121 Int'l. Tele-Video Marketing, Inc.	336
— I.S.C.	310-311
41 Kenosha Computer Center ..	327
— L A Trade	334
195 Micro Professionals	314
315 Microsphere, Inc.	322
— Octagon.....	326
— On-Line Stores.....	332
198 PC Brand, Inc.	179-186
— PC Connection	202-207
224 Printers Plus	322
229 Reasonable Solutions	313
125 RP Systems	324
297 Software Excitement	319
— Star West	325
178 Telemart	328-329
— United Computer Express	335
289 Unitex	316-317
On-Line Services	
67 Delphi	322
— Dow Jones Information Services	285
133 GE Information Services	274-275
Periodicals/Subscriptions	
49 Computer Book Club, The	197
241 Newbridge Communications, Inc.	217
Security	
31 Secure-It	232

Reader Service Number	Page Number
Supplies	
32 BASF Systems Corp.	268
— Maxell	243
269 Sony Magnetic Products ..	102-103

Products Featured in Editorial

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
Accounting	
688 DacEasy Accounting, DacEasy.	195
Add-On Board	
680 AboveBoard Plus, Intel	194
716 VGA Wonder, ATI Technologies.	193
Backup Software	
757 The Norton Backup 1.1, Peter Norton Computing.	130
CAD/CAM	
683 AutoCAD, Autodesk	196
754 DesignView 2.0, Premise	128
Communications	
655 Carbon Copy Plus, Microcom Software Division	50
656 Co/Session, Triton Technologies	50
657 pcAnywhere, Gateway Communications	50
620 Procomm 2.4.3, Procomm Plus; Datastorm Technologies.	220, 194
658 Remote2, DCA/Crosstalk Communications	50
659 Takeover, SoftKlone.	50
Communications Utility	
615 PKUNZIP 1.10, PKZIP; PKWare.	219
621 Qmodem 4.2, Forbin Project.	220
616 Shez 5.5, California Software Design	220
622 TAPCIS 5.2B, The Support Group.	220
Computer System	
739 AST Premium 486/33, AST Research	116
743 The Brick, Ergo Computing.	128
685 Compaq Deskpro 386/33, Compaq Computer.	193
686 Compaq LTE, Compaq LTE/286, Compaq LTE/286 Model 20; Compaq Computer.	137, 193, 142
687 Compaq Portable 386, Compaq Computer.	193

Reader Service Number	Page Number
738 NCR PC486/MC33, NCR	116
749 Sharp PC-4741, Sharp PC-5741; Sharp Electronics	118
725 Sharp PC-6220, Sharp Electronics.	142
731 Tandy 1000 RL, Tandy	109
726 Texas Instruments TravelMate 2000, Texas Instruments.	146
727 Toshiba T1000XE, T1200XE; Toshiba America Information Systems	138, 146
728 Zenith MinisPort HD, Zenith Data Systems	140
Data Base Management	
745 DataEase SQL, DataEase Int'l	118
689 dBASE IV, Ashton-Tate	194
673 Emerald Bay Database Server 2.1, Ratliff Software Production ..	164
623 File Express 4.32, Expressware	220
665 IBM OS/2 Extended Edition 1.2 Database Manager, IBM.	159
671 Informix-On-Line 4.0, Informix Software.	164
668 Microsoft SQL Server 1.0, Microsoft	167
670 NetWare SQL 2.10, Novell	164
666 Oracle Server for OS/2 1.0, Oracle.	163
732 Paradox 3.5, Paradox Engine 2.0, Paradox SQL Link 1.0; Borland Int'l	105
624 PC-File 5.0, ButtonWare.	220
706 Q&A 3.0, Symantec.	195
752 R:base 3.1, Microrim	124
667 SQLBase Server for OS/2 4.0.1, Gupta Technologies	167
672 XDB-Server, XDB Systems ..	164
Data Base Utility	
684 Clipper, Nantucket.	196
674 On dMAND, Applied MicroSystems	253
Desktop Publishing	
700 PageMaker, Aldus	194
Desktop Publishing Utility	
610 FontSpace, Isogon	260
Development Tool	
730 CodeRunneR, Microsystems Software.	278
640 QEdit Advanced 2.1, SemWare	223

Reader Service Number	Page Number
Disk Drive	
708 Seagate ST251-1, Seagate Technology	193
Display	
698 NEC MultiSync 3D, NEC Technologies.	193
Entertainment/Game	
695 Microsoft Flight Simulator; Microsoft	195
Financial	
618 Finance Manager II 1.3, Hooper Int'l	220
Graphics	
750 Charisma, Micrografx.	128
751 DrawPerfect 1.1, WordPerfect.	120
691 Harvard Graphics, Software Publishing	195
704 PC Paintbrush, Z-Soft Corp. ..	195
Information Management	
617 Contact Plus 2.12, Trujillo Software.	220
Input Device	
696 Microsoft Mouse, Microsoft	193
760 Microsoft Mouse/Windows 3.0, Microsoft	130
Integrated Software	
697 Microsoft Works, Microsoft ..	195
Language	
714 Turbo Pascal, Borland Int'l.	195
LAN Operating System	
681 Advanced NetWare/286, Novell	196
LAN Peripheral	
746 IRMAtrac Token-Ring Adapter/Convertible, Digital Communications Associates ..	122
713 Token-Ring, IBM.	196
Miscellaneous	
702 PC Connection.	196
647 PC-SIG.	221
619 Pony Express 1.104, Melisco Marketing	220
648 Public Brand Software	221
649 Public Software Library.	221
Modem	
710 Smartmodem 2400, Hayes Microcomputer Products	193



PRESERVATION...PLAN ON IT

Write:

National Trust for Historic Preservation, Department PA,
1785 Massachusetts Ave., N.W., Washington, D.C. 20036

Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number
753 T24D/X, Toshiba America Information Systems	122	Printer Accessory		699 1-2-3, Lotus Development	194	635 Newkey 5.2, FAB Software	222
On-Line Service		735 Script Cartridge, Adobe Systems	113	643 PC-Calc+ 2.0, ButtonWare	223	636 Patriquin's Utilities, Patri-Soft	222
645 CompuServe, CompuServe Information Service	196, 221, 338	747 25 Plus/Charisma Master-Cartridge, Elite Business Applications	124	707 Quattro Pro, Borland Int'l	196	705 PC Tools Deluxe, Central Point Software	194
721 Dialog Information Service	338	Printer Utility		761 Wingz PC Bonus Pack, Informix Software	130	742 PFS:Preface, Software Publishing	126
646 GEnie, General Electric Information Service	221	605 LANsmart/NV 2.0, D-Link Systems	173	Spreadsheet Utility		626 Power Desk 1.26sw, Wade B. Dowdle	220
663 MetaStock Professional 2.0, Equis Int'l	266	606 LANSpool 2.0, LANSystems	174	682 Allways 1.2, Funk Software	196	709 SideKick Plus, Borland Int'l	196
662 NewsNet, Independent Publications	265	608 Printer Assist 3.0, Q Assist 4.0; Fresh Technology Group	176	676 Beyond 640, Intex Solutions	248	755 Spinrite II 1.1, Gibson Research	130
720 Prodigy	338	607 PS-Print 2.3, Brightwork Development	175	Tax		641 StacKey and BatUtil 3.0, The Support Group	222
Operating System/Environment		Project Management		715 TurboTax, Chipsoft	195	630 WYND-DOS 2.0, Wyndware	222
703 PC-DOS, IBM	194	759 Project Bridge, Applied Business Technology	130	Utility		Word Processing	
Other Peripheral		712 Time Line, Symantec	196	601 Automate/Anytime, Complementary Solutions	46	637 PC-Type II 1.0, ButtonWare	223
753 Desk Station, Toshiba America Information Systems	122	Scanner		627 Automenu 4.7, Magee Enterprises	222	639 PC-Write 3.03, Quicksort	223
Printer		741 Epson ES-300C, Epson America	126	602 Auto-Might, The Pendulum Group	46	758 Professional Write 2.2, Software Publishing	130
737 Epson LQ-860, Epson America	114	694 HP ScanJet Plus, Hewlett-Packard	194	631 CED (Command E) 1.0D, The Cove Software Group	222	717 WordPerfect, WordPerfect	194
692 HP LaserJet Series II, Hewlett-Packard	193	Scanning Software		748 Desqview 2.3, QEMM 5.1; Quarterdeck Office Systems	124	Word Processing Utility	
693 HP LaserJet Series IIP, Hewlett-Packard	194	744 ReadRight Personal, ReadRight for Windows; OCR Systems	120	628 DoubleDir 2.5, Eric Grunin	222	740 AutoWord, White Crane Systems	114
701 Panasonic KX-P1124, Panasonic Communications and Systems	193	756 Read-It O.C.R. 2.0, Olduvai	130	632 Fansi-Console 2.00U, Hersey Micro Consulting	222	690 Grammatik, Reference Software Int'l	195
736 QMS PS 410, QMS	116	Spreadsheet		633 4DOS 3.02, J.P. Software	222	638 PC-Outline 3.34, Brown Bag Software	223
		642 As-Easy-As 4.00, Trius	223	625 HomeBase 2.53, Brown Bag Software	220	763 WordPerfect Office Editor 3.0, WordPerfect	130
				629 List 7.3d, Vernon D. Buerg	222		
				634 Mark and Release 2.9, Turbo Power Software	222		

PCWORLD

WHAT'S NEW? The PC World Instant Reference Card

WHAT'S NEXT? A new card every month

You've Seen Them - there's one in each issue. These guides give you quick answers to common questions about DOS, 1-2-3, WordPerfect, and all the other applications you use daily.

And We Know You'll Want to Save Them - Tear out the Instant Reference Card each month and keep them clean, neatly organized, and accessible with PC World's Instant Reference Portfolio. Custom-designed to hold a year's worth of cards, this handy portfolio could become the most valuable item on your desktop - after your PC, of course.

\$24.95 Shipping Included
Call 1-800-395-5763
TO ORDER TODAY!

PC WORLD MAIL ORDER Shopping Guide

*Buy with
Convenience*

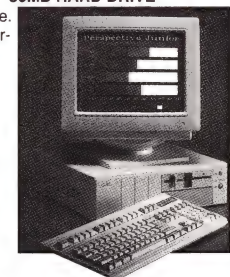
*Buy with
Confidence*

DAMARK LIMITED QUANTITIES ORDER TODAY! **1-800-729-9000**

FAMOUS MAKER

286 AT COMPUTER WITH 14" HIGH RESOLUTION VGA COLOR MONITOR and 30MB HARD DRIVE

- 80286 microprocessor, 12.5/6.25MHz switchable.
- One MB RAM on motherboard, expandable to four MB. • 30 MB hard drive. • One 5.25" 1.22MB floppy drive.
- High resolution VGA monitor: 640 x 480.
- Socket for 80287 math co-processor. • 16-bit VGA card; 800 X 600 resolution.
- IBM compatible.
- 3 expansion slots—two 16-bit and one 8-bit.
- 1 serial port. • 1 parallel port. • PS/2 compatible 6-pin mouse port. • Phoenix 286 ROM BIOS.
- Includes MS-DOS 4.01 with DOS Shell utilities and GW BASIC™.
- PC dim.: 4-1/4"H x 15"W x 15-1/2"D.
- Monitor dim.: 13.9"W x 14.7"D x 14.1"H.
- **One Year Mfr. Warranty!**
- **Factory New! & Perfect!**



Mfr. Sugg. Retail: **\$2,094.00**

DAMARK \$999.99
PRICE

Item No. B-2356-149047
Insured Ship/Hand.: \$49.00

cordata

386SX COMPUTER with VGA MONITOR

- 100% IBM compatible.
- 80386SX-16/8 MHz speed, zero wait state upgradable to 20 MHz.
- One 3-1/2" 1.44 MB floppy disk drive. • One 5-1/4" 1.2 MB floppy disk drive.
- 40 MB hard drive/28 millisecond access time.
- 1 MB RAM on motherboard, expandable to 8 MB. • Expansion slots: four IBM AT slots. • Built-in VGA video support.
- Battery backed real time clock/calendar. • Two serial & one parallel port. • 80387SX-16 math co-processor socket. • 101 key IBM style keyboard.
- Phoenix BIOS. • Model # CPC8248. • Includes MS-DOS 4.0.
- Does not include software shown on screen.
- Dim.: 16"Wx18"Dx5"H. • **One Year Warranty through Cordata. • Factory New! Factory Perfect!**
- 14" non-glare color monitor.
- 100% IBM compatible.
- 256 colors.
- Resolution: 640x480.
- Dim.: 14.72"W x 12.40"H x 15.64"D



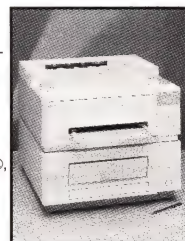
Mfr. Sugg. Retail: **\$2,968.00**

DAMARK \$1499.99
PRICE

Item No. B-2356-143578
Insured Ship/Hand.: \$49.00

Qume SCRIPTEN™ LASER PRINTER WITH ADOBE® POSTSCRIPT® FOR IBM® & APPLE®

- 100% IBM compatible. • 3 MB RAM. • 1 MB ROM. • Adobe controller. • 68000 microprocessor. • Prints 10 pages per minute. • Resolution: 300 x 300 dpi. • 35 built-in typefaces including: Courier, Helvetica®, ITC Avant Garde Gothic®, ITC Bookman®, ITC Zapf Dingbats®, New Century Schoolbook®, New Helvetica Narrow®, Palatino®, Symbol®, Times®.
- Emulates the HP LaserJet™.
- Type styles and sizes: most characters can be printed from 2 pt. to 127 pt. Plain, bold, italic, underline, & combinations of these can also be printed. • Supplies include: toner cartridge, developer cartridge and drum (all included).
- Interface/system compatibility: AppleTalk (RS-422), RS232 serial port, baud rates (1200, 9600, 19200), centronics parallel, HP LaserJet Plus. • Marking engine: Hitachi SL-100. • Reliability: 5,000 pages/mo. duty cycle.
- Dim.: 20" x 17-1/4" x 15".
- Weight: 90 lbs.
- 90 Day Mfr. Warranty!
- **Factory New & Perfect!**



Mfr. Sugg. Retail: **\$4,595.00**

DAMARK \$1999.99
PRICE

Item No. B-2356-150730
Insured Ship/Hand.: \$69.00

Name _____
Address _____
City, State, Zip _____
☐ Check/MO ☐ VISA ☐ Master Card ☐ Discover
Card No. _____
Exp. Date _____ Ph. # () _____
Signature _____

TOLL FREE **1-800-729-9000**

Please rush me: **286 AT Computer(s) @ \$999.99 each,** plus \$49.00 s/h each.
Item No. B-2356-149047

Please rush me: **386SX Computer(s) @ \$1499.99 each,** plus \$49.00 s/h each.
Item No. B-2356-143578

Please rush me: **Laser Printer(s) @ \$1999.99 each,** plus \$69.00 s/h each.
Item No. B-2356-150730

MN res. add 6% sales tax.

DAMARK International, Inc.

7101 Winnetka Ave. North,
Minneapolis, MN 55428-1619
Customer Service
612-531-0082

**DELIVERY TO 48
U.S. STATES ONLY**

Copyright 1990 DAMARK International, Inc.
All Rights Reserved

INTRODUCING THE

SERVICE

- Toll Free Customer Support Daily
- Free Technical Support
9:30-4:30 Daily
- 90 Day Money Back Guarantee
- Lifetime Parts/Labor
- Free Shipping on products
serviced by us

XT Power System



- 4.77/10 MHz Motherboard
- 8088-10 CPU
- (1) 360K Floppy Drive
- 640/K RAM on board
- Floppy Controller
- 8 Expansion Slots
- 150 Watt Power Supply
- AT Style Keyboard
- Reset Button / Keyboard Lock
- LED Power and Turbo Indicators
- Serial/Parallel/Clock & Game Port
- Mono Card/Parallel Port
- Monochrome Amber Monitor

\$ 459.

QUALITY

- All Name Brand Parts: Seagate, Western Digital, Paradise, Teac, Toshiba, Samsung, NEC, Epson
- All Systems - 48 hour Burn-in

286 Power System



- 6-12 MHz Motherboard
- 80286 CPU
- Norton Si Rating 15.3
- 0 Wait State
- 1.2MB High Capacity Floppy
- 1 Meg RAM Expandable to 4 MB
- Serial Port
- Parallel Port
- 1.2MB Floppy Controller
- 8 Expansion Slots
- 6-16 Bit, 2-8 Bit Slots
- 200 Watt Power Supply
- AT Style Keyboard
- Reset Button / Keyboard Lock
- LED Power and Turbo Indicators
- Mono Card/Parallel Port
- Monochrome Amber Monitor

\$ 759.

PRICE

- Factory Direct Pricing
- Lowest Prices in the Industry

386 Power System



- 8-20 MHz Motherboard
- 80386 CPU
- AMI Bios
- 1 Meg RAM (80 nsec.) Installed
- 1.2MB/1.44 High Capacity Drives
- 2 Serial Ports / 1 Parallel Port
- 80387 Co-processor Socket
- Floppy/Hard Drive Controller
- 8 Expansion Slots
- 2-32 Bit, 5-16 Bit, 1-8 Bit
- RAM Upgradable to 8 Meg
- 200 Watt Power Supply
- 101 Key Enhanced Keyboard
- Reset Button / Keyboard Lock
- LED Power & Turbo Indicators
- Clock/Calendar with Battery Backup
- Mono Card/Parallel Port
- Monochrome Amber Monitor
- AC Power Pad

\$ 1,299.

HARD DRIVE OPTIONS

- 20MB Seagate Hard Drive . . \$699.
- 30MB Seagate Hard Drive . . \$719.
- 40MB Seagate Hard Drive . . \$845.

- 20MB Seagate Hard Drive . . \$925.
- 30MB Seagate Hard Drive . . \$950.
- 40MB Seagate Hard Drive . \$1,045.
- 80MB Seagate Hard Drive . \$1,245.

- 20MB Seagate Hard Drive . \$1,495.
- 30MB Seagate Hard Drive . \$1,510.
- 40MB Seagate Hard Drive . \$1,645.
- 80MB Seagate Hard Drive . \$1,845.

MONITOR OPTIONS

EGA MONITOR/EGA CARD*
\$ 316. with system

VGA MONITOR/VGA CARD*
\$ 399. with system

**Monitor Prices only good when sold as a part of a system. - (Optional DOS 4.0 or 3.3 \$75.) - Any Computer System Configuration is Available*

I.S.C. Power Systems 1-800-955-4858

SAVINGS *again . . . again . . . and again.*
In CA. Call - 213-379-4866



PRINTERS

HEWLETT PACKARD

Laser Jet III	PRICE MATCH!
Laser Jet II P	PRICE MATCH!
Laser Jet II D	\$CALL
Desk Jet/Desk Jet Plus	\$CALL
Laser Jet Toners	\$ 79.
250 Sheet Paper/Letter Tray	\$ 59.

KENSINGTON

100% HP Compatible Memory Boards

1 MG Upgrade	\$CALL
2 MG Upgrade	\$CALL
4 MG Upgrade	\$CALL

PANASONIC

KXP 1180 192 cps, 80 col. 9-pin	\$ 169.
KXP 1124 192 cps, 24-pin	\$ 299.
KXP 1624 192 cps, 132 col. 24-pin	\$CALL
KXP 1695 330 cps, 132 col. 9-pin	\$CALL
KXP 4420 Laser, 8 page per minute	\$CALL

EPSON

LX810 180/30, 9-pin	\$ 182.
FX850 330/88, 9-pin	\$ 332.
LQ850 330/88, 24-pin	\$ 522.
LQ950 264/88, 24-pin	\$CALL
LQ510 180/60, 24-pin	\$ 319.
FX1050 264/54, 9-pin	\$ 442.
LQ1050 330/88, 9-pin	\$ 719.
LQ2550 400/108, 24-pin	\$CALL

HARDWARE

AT 12 MHZ (exp. 4 meg 0 wait)	\$ 165.
XT 10 MHZ Turbo (exp. 0 wait)	\$ 69.
Power Supply 200 Watt	\$ 49.
Power Supply 150 Watt	\$ 39.
XT Case (w/hardware)	\$ 34.
Baby AT Case (w/hardware)	\$ 52.
AT Case (Full Size)	\$ 59.
Keyboard 84 Key (tactile touch)	\$ 40.
Keyboard 101 key (tactile touch)	\$ 54.
Multi IO Card	\$ 34.
Floppy Controller Card	\$ 21.
FHDC (1.44/1.2/720K/360K)	\$ 45.
AT IO	\$ 32.
Serial Card	\$ 20.
Parallel Card	\$ 20.
Game Card	\$ 20.



MONITORS

SAMSUNG

1257 Amber (12" 720x350)	\$ 74.
1464 RGB (14" 640x200)	\$ 215.
1453 EGA (14" 690x350)	\$ 329.
VGA (14" 720x580)	\$ 359.

NEC

Multisync 2A 14" (800x600) VGA	\$ 469.
Multisync GS 14" Mono	\$CALL
Multisync 3D 14" (1024x768) EGA/VGA	\$ 589.
Multisync 4D 16" (1024x768) .28DP	\$CALL
Multisync 5D 20" (1280x1024) .31DP	\$CALL

PACKARD BELL/PGS/SONY

Mono 12" Amber 720x350	\$ 74.
PGS Ultrasync 14" VGA	\$CALL
Sony 1302/1304	\$CALL

VIDEO CARDS

PARADISE

VGA 1024x768 with 512K	\$CALL
------------------------	--------

PC BRAND

Mono Graphics w/Printer Port	\$ 34.
Color Graphics w/Printer Port	\$ 34.
EGA (640x480) Autoswitch	\$ 89.
VGA 16 Bit	\$ 159.



HARD DISK DRIVES

SEAGATE

20MB 65MS ST225 w/XT Controller	\$ 229.
20MB 35MS ST125 w/XT Controller	\$ 299.
30MB 65MS ST238 w/XT Controller	\$ 239.
30MB 35MS ST138 w/XT Controller	\$ 345.
40MB 28MS ST251-1	\$ 349.
80MB 28MS ST4096 Full Height	\$ 545.

HARD DRIVE CARDS

XT MFM (20mg Controller)	\$ 64.
XT RLL 27x(30mg Controller)	\$ 69.
AT MFM 2:1 Controller	\$ 82.
AT MFM 1:1 Controller	\$ 112.
AT RLL 1:1 Controller	\$ 122.

FLOPPY DISK DRIVES

TOSHIBA

360K 5.25" HH Black	\$ 59.
720K 3.5" HH w/5.25" Mount	\$ 64.
1.2MB 5.25" HH Grey	\$ 69.
1.44MB 3.5" HH Grey w/5.25" Mount	\$ 79.

TEAC

360K 5.25" HH Black	\$ 59.
720K 3.5" HH w/5.25" Mount	\$ 64.
1.2MB 5.25" HH Grey	\$ 74.
1.44MB 3.5" HH Grey w/5.25" Mount	\$ 84.

FUJITSU

360K 5.25	\$ 59.
1.2, 5.25	\$ 69.

SONY

720K 3.5	\$ 64.
1.44, 3.5	\$ 84.

MODEMS

Mastercom - 1200B (internal)	\$ 44.
Mastercom - 2400B (internal)	\$ 75.
US Robotics, Courier HST/9600B	\$ 615.

SOFTWARE

Wordperfect 5.1	\$CALL
Lotus 1-2-3 2.2/3.0	\$CALL
Microsoft ALL	\$CALL

MOUSE

Genius Mouse, GM6X	\$ 35.
--------------------	--------

CALL US LAST . . . WITH YOUR BEST QUOTE !

QUICK SHIPMENTS TO US/OVERSEAS

C.O.D. AVAILABLE

HOURS: MON - FRI 8AM to 5PM

CUSTOMER/TECH SUPPORT: 9:30AM to 4:30PM

Prices subject to change without notice



CUSTOMER SERVICE ONLY - 800-933-5161

TECHNICAL SUPPORT: 213-379-9209 - FAX: 213-318-0555

2629 Manhattan Avenue #235 - Hermosa Beach, CA 90254

BEFORE YOU HIRE SOMEONE,
YOU HAVE TO READ BETWEEN THE LINES.

"I'D REALLY LIKE TO WORK HERE."

How do you tell if an entry-level person is full of promise or just full of promises?

"I KNOW I CAN DO THE JOB."

Get involved in the Cooperative Education Program. Co-op students alternate between college and paid,

"ALL I NEED IS A LITTLE EXPERIENCE."

practical work experience in the field of their choice. So your company not only gets first crack at

"I'M A REAL HARD WORKER."

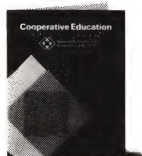
dedicated, well-trained people, you get on-the-job performance to help evaluate them. If you'd

"I'M VERY GOOD WITH PEOPLE."

like to know more about how you can participate in the Co-op Program,

"YOU WON'T BE SORRY."

contact us at the address below and we'll send you an informative free packet.
You'll want to read every line.



For free information,
call (617) 437-3770 or write us: P.O. Box 775E, Boston, MA 02115

CO-OP EDUCATION

Because everyone profits from experience.

© 1990 National Commission for Cooperative Education

If You Like Our Prices... You'll Love Our Guarantee!

If for Any Reason You're Not Satisfied with Our Product, Return It . . . Anytime, for a Full Refund!

BUSINESS/HOME

- **Amortization Table 3.5 (1115)** — Handles all types.
- **Express Check 4.03 (2 disks) (1110)** — A great program to manage your checking accounts! Even prints checks!
- **Home Inventory 4.0 (3137)** — Helps you keep track of everything you own. Great for insurance.
- **In-Control 3.0 (2 disks) (1220)** — Keep track of clients, customers, prospects and much more.
- **Names & Dates 3.3 (2 disks) (3140)** — Great personal information manager! Keeps track of anything and everything.
- **Painless Accounting 4.0 (3 disks) (1120)** — Easy to use and loaded with features. General Ledger, Accounts Receivable/Payable, invoicing, check printing and more. (HD)
- **Personal Budget Tools 1.6 (3987)** — Great way to plan your household budget. Powerful and easy to use.
- **PC-Calc 2.0 (3 disks) (3410)** — A very powerful spreadsheet.
- **PC-File 5.0 (3 disks) (1330)** — An excellent dBase compatible data base program. Very powerful! (HD)
- **PC-Write 3.03 (3 disks) (3820)** — Easy to use word processor that is loaded with features including spell checker.

CLIP ART (PCX)

Note: These disks contain clip art in PCX (PC-Paintbrush) format. They can be used with WordPerfect 5.0/5.1, Pagemaker, Ventura Publisher, Windows or programs that can read PCX files.

- | | |
|-------------------------------------|-------------------------------------|
| ■ Account/Dingbats (2617) | ■ Headlines (2 disks) (2670) |
| ■ Birds (2 disks) (2620) | ■ Holidays (2616) |
| ■ Business (2 disks) (2630) | ■ Houses (3 disks) (2680) |
| ■ Children (2614) | ■ Ladies (2 disks) (2690) |
| ■ Church (2615) | ■ Men (2 disks) (2750) |
| ■ Education (2 disks) (2640) | ■ Misc. (4 disks) (2760) |
| ■ Family (3 disks) (2650) | ■ Sports (2 disks) (2790) |
| ■ Food (2 disks) (2660) | ■ Wedding (3 disks) (2850) |

EDUCATION

- **Amy's First Primer (1717)** — Six different learning programs for children ages 4-8. (CGA)
- **The DOS Learning System (1417)** — Learn how to use DOS with this great program. Covers all versions of DOS 2.0-4.01.
- **Funnels & Buckets (1727)** — Teach children basic math skills!
- **Lotus Learning System (2 disks) (1420)** — Learn Lotus 2.0 easily and quickly.
- **Play 'n' Learn 2.12 (1735)** — A collection of six programs for children 18 months to 4 years. (CGA)
- **Typing Teacher (1425)** — Five great programs designed to improve the speed and accuracy of your typing!
- **World 2.99 (1849)** — The ultimate globe! Learn about cities, countries with this computerized globe. (CGA)
- **Tutor DOS (4 disks) (1450)** — The ultimate DOS tutorial. Everything you wanted to know about DOS and more! (HD)

GAMES

- **Arcade Games 1 (1811)** — Pac-man (3 versions!), Hopper, Space Invaders, Janitor Joe and others. (CGA)
- **Arcade Games 2 (1812)** — Q-Bert, Donkey Kong, Breakout, Beast and others. (CGA)
- **Bassfour 4.2/BassMap (2 disks) (2350)** — The ultimate fishing game. Loads of fun for everyone! (CGA)
- **Ed's Chess 1.99 (2425)** — The best chess game available anywhere. (It beat Chessmaster 2000)
- **Kids' Games (2317)** — Fun for the under-12 set.
- **Mazes, Mazes, Mazes (2 disks) (2440)** — The name says it all!
- **Miramar Flight Simulator 2.0 (2319)** — Go to Top Gun flight school and pilot an F-18 into combat. (CGA)
- **Strategy Games (2461)** — Risk, Othello, Chess, Nyet (Tetris clone), and others. (CGA)
- **Tommy's Monopoly (2445)** — A great rendition of the classic game. Great color and sound! (CGA)

MISCELLANEOUS

- **Banner & Sign Makers (3215)** — Make banners or signs for any occasion. Works with any printer.
- **Brother's Keeper 4.5 (3 disks) (3120)** — Excellent, full-featured genealogy program that's easy to use.
- **FormGen 4.0/FormFill 1.2 (2 disks) (3240)** — A very versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer. Includes numerous sample forms to get you started!
- **Mealmaster 6.14 (2 disks) (3160)** — A complete recipe filer. Comes with over 450 recipes to start you off.
- **Mr. Label 5.0 (3235)** — Powerful & versatile label maker.
- **Online Bible 4.0 (13 disks) (3170)** — Complete KJV Bible. Includes Greek/Hebrew Lexicon & Cross Reference. (HD)
- **PC-Key-Draw 3.75 (4 disks) (2780)** — An exceptionally powerful graphics program. Comes with a large collection of ready-made graphics. (CGA) (HD)
- **Pianoman 4.0 (3147)** — Create and play music on your PC!
- **Resume Shop 2.1 (3136)** — Great program to help you organize and print out a resume!
- **SpeedRead (1845)** — Learn to speed read!
- **Willkit (3157)** — Prepare a will that is valid in all 50 states.

UTILITIES

- **Automenu 4.5 (3515)** — Latest version of the most popular menuing program of all time!
- **Best DOS Utilities (2 disks) (3520)** — Essential utilities for DOS. Screen blankers, file finders, numerous other handy utilities that will save you time. Very easy to use!
- **Epson Utilities (2 disks) (3210)** — A collection of utilities for Epson and Epson-compatible printers.
- **Vaccines and Virus Killers (3627)** — A collection of utilities designed to protect your system from viruses! This disk will find (and destroy!) over 100 different viruses.

WORDPERFECT 5.0/5.1

- **WordPerfect 5.0/5.1 Art & Graphics Vol. 1 (2 disks) (3710)** — Over 100 graphics for WordPerfect 5.0/5.1.
- **WordPerfect 5.0/5.1 Art & Graphics Vol. 2 (2 disks) (3770)** — Over 100 more graphics for WordPerfect 5.0/5.1.
- **WordPerfect 5.0/5.1 Art & Graphics Vol. 3 (2 disks) (3780)** — Over 100 more graphics for WordPerfect 5.0/5.1.
- **WordPerfect 5.0/5.1 Tools (2 disks) (3750)** — 17+ great utilities for WordPerfect 5.0/5.1.
- **WordPerfect 5.1 Learning System (3 disks) (4230)** — Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- **WordPerfect 5.1 Macros (2 disks) (4220)** — Over 100 helpful macros for WordPerfect 5.1.
- **WordPerfect 5.0 Learning System (2 disks) (3730)** — Learn how to use WordPerfect 5.0 easily and quickly with this great tutorial (WordPerfect 5.0 is NOT required).
- **WordPerfect 5.0 Macros (2 disks) (3720)** — Over 100 helpful macros for WordPerfect 5.0.
- **PC-Draft II & III (2 disks) (3760)** — Create clip art & graphics for WordPerfect 5.0/5.1. (CGA) (HD)

WINDOWS 3.0

Note: These disks require Windows 3.0.

- **Active Life 1.2 (4536)** — A great "Personal Information Manager" that will keep track of all sorts of important information.
- **Almanac (4535)** — The ultimate calendar for Windows!
- **Command Post 7.0H (4537)** — Great file manager and menu system that is customizable to your needs & preferences.
- **Games for Windows (4538)** — Great games including Klotz (Tetris Clone), Worm War (Centipede clone), Atmoids, Lunar Lander, Checkers, Backgammon and more!
- **Hyperdisk 4.01 (4539)** — Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- **Icons & IconDraw 1.2 (4545)** — Includes over 600 icons, and IconDraw so you can modify them or create your own!
- **Toolbox Programs (4546)** — Applications and utilities for the Windows Toolbox.
- **Utilities for Windows (3 disks) (4510)** — 40+ utilities that will help you get the most out of Windows, as well as making Windows easier to use!
- **Wallpaper for Windows (4 disks) (4520)** — If you want a different background with Windows, this set offers over 80 different backgrounds.

(CGA) Requires Color Graphic Adapter (HD) Requires Hard Disk

*All orders shipped same day.
Free catalog of over 200 programs
with every order or by request.*

**Unconditional
Money-Back Guarantee!**

\$1.75
per disk
10 disks or more
or
2.25
per disk
1-9 disks

**Order Toll Free
1-800-876-3475**

Information: 503-776-5777
Fax: 503-773-7803

Circle 229 on reader service card

Name _____
Business/Company (if applicable) _____
Address _____
City/State/Zip _____
Phone _____
Method of Payment: ☐ Check/Money Order ☐ Visa/MasterCard ☐ COD
All checks must be payable in US funds. We cannot accept Eurocheques.

Disk size: ☐ 5 1/4" ☐ 3 1/2" (add \$1 per disk if you require 3 1/2")
No. Disks _____ x \$ _____ = \$ _____
☒ Shipping \$ **\$3.00**
U.S. Only { ☐ Airborne Express, Overnight (add \$6) \$ _____
☐ UPS 2nd Day Air (add \$4) \$ _____
☐ COD (add \$4) \$ _____
☐ Foreign (add \$4) \$ _____
TOTAL ORDER: \$ _____

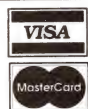
Card No. _____ Exp. Date _____ Signature _____



Reasonable Solutions

2101 West Main, Medford, Oregon 97501

Toll free 800-876-3475 or 503-776-5777, Fax 503-773-7803



PCW 1090



Guaranteed Lowest



GoldStar

Prices!!

VGA and High Resolution

1430 VGA 14" Display, Tilt/Swivel, High Res. Picture Tube	\$315
with 16 Bit Small Wonder VGA Card	\$449
1425 VGA 14" Display, Tilt/Swivel	\$275
with 16 Bit Small Wonder VGA Card	\$415
1450 Supersync 14" Display 800 X 600 Res., MAC II Compatible	\$369
with 16 Bit ATI 1024 X 768 VGA Card	\$549
1460 VGA 14" Display, 1024 X 768 Res., .28 Dot Pitch	\$385
with 16 Bit ATI 1024 X 768 VGA Card	\$579
1610 16" Super VGA, 1024 X 768/800 X 600/640 X 480	
Super Large Display Area	\$689
with 16 Bit ATI 1024 X 768 Card	\$869

New!

GoldStar GS1423 VGA 14" Display, Tilt/Swivel Base, .51 Dot Pitch	\$249
--	-------

Micro Pro Video Cards

VF-EGA 800 X 600	\$79
VF-VGA 1024 X 768, 16 Bit, 256K	\$119

Monochrome

1210A 12" Amber TTL Tilt/Swivel Base	\$74
with GoldStar Mono Card	\$109
1401A 14" Amber Flat Screen Tilt/Swivel Base	\$109
with GoldStar Mono Card	\$144
1220W 12" Paper White VGA, Tilt/Swivel Base	\$110
1405 Plus 14" Paper White VGA, 800 X 600, Flat Screen	\$179

Color

1410 CGA 14" Display, Tilt/Swivel, Green Text Switch	\$189
with GoldStar CGA Card	\$229
1420 EGA 14" Display, Tilt/Swivel, Text Switch	\$279
with EGA Card	\$355

Miscellaneous

GoldStar 2400 Baud External Modem	\$119
GoldStar 2400 Baud Internal Modem	\$99
GoldStar 1200 Baud External Modem	\$69
GoldStar 2400 Baud MNP5 External	\$199
GoldStar Mono/CGA Printer Card	\$45

PRO SERIES PRO 286 \$749⁰⁰

- 12 MHZ, IBM, AT, zero wait state
- 1 MB High Speed RAM
- 1.2 MB Floppy Diskette Drive
- 1.44 MB 3 1/2" Floppy Diskette Drive
- Supports LIM/EMS 4.0
- Hard and Floppy Disk Controller
- Two Serial, One Parallel Port
- 101 Style Keyboard
- Mono Video Adapter
- Norton SI Rating 15.3
- Landmark Rating 15.4

30 Day Money-Back Guarantee
One Year Nationwide Warranty

MS-DOS 3.3 and GW BASIC with system	\$59
GoldStar Monochrome Monitor with PRO 286	\$59

TURBO XT \$489⁰⁰

- GS1210A Monochrome Monitor with Mono Card
- 640K Memory
- One 360K Floppy Disk Drive
- Dual Floppy Controller
- Parallel and Serial Ports
- DOS and BASIC Included
- 5-8 Bit Expansion Slots
- 101 Keyboard
- Free Alpha Works Software for Word Processing, Database and Communications

Full One Year Manufacturers Warranty
4-Month ON-SITE (at your location)
SERVICE FREE! Call for Configurations



KYOCERA

3 1/2" Hard Disk Drives

KYOCERA KC20B - 20 MB, 60 MS	\$194
KYOCERA KC30B - 30 MB, 60 MS	\$208
KYOCERA KC40GA - 40 MB, 28 MS	\$349

MICROSCIENCE

5 1/4" Hard Disk Drives

HH 1050 - 45 MB, 28 MS	\$325
HH 1060 - 65 MB, 28 MS, RLL	\$335
HH 1090 - 80 MB, 28 MS	\$549
HH 2120 - 122 MB, 28 MS, (ESDI)	\$725
AT Hard Drive Controller Kit	\$99

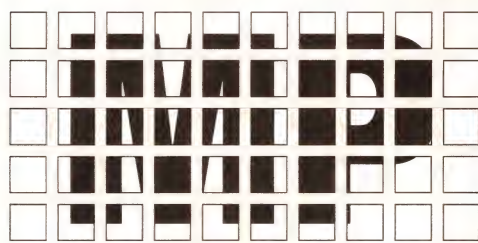
CHINON

Floppy Drives

3 1/2" C354, 720 KB	\$58
3 1/2" C359, 1.44 KB	\$74
5 1/4" C502, 360 KB	\$54
5 1/4" C506, 1.2 MB	\$68

Genoa
SYSTEMS CORPORATION

VGA 6300, 1024 X 768, 16 Bit, 256K	\$169
VGA 6400, 1024 X 768, 16 Bit, 512K	\$189



MicroProfessionals

19261 Burnham, Suite 100 • Lansing, IL 60438

Seagate

Hard Disks

5 1/4" ST225, 20 MB, 65 MS	\$195
5 1/4" ST238R, 30 MB	\$209
5 1/4" ST251-1, 40 MB, 28 MS	\$327
5 1/4" ST4096, 80 MB	\$549
3 1/2" ST125, 21 MB, 40 MS	\$234
3 1/2" ST138, 32 MB, 40 MS	\$259
3 1/2" ST138-1, 32 MB, 28MS	\$285

PARADISE

Video Cards

Auto Switch 480 - EGA and 132 Column	\$109
Basic VGA 640 X 480	\$135
VGA 1024 X 768 with 256K	\$235
VGA 1024 X 768 with 512K	\$269

NEC

Monitors

Multisync GS2A 800 X 600 VGA Mono	\$219
Multisync 2A 14" 800 X 600 VGA Color	\$435
Multisync 3D 14" 1024 X 768 VGA Color	\$579
Multisync 4D 16" 1024 X 768 VGA Color	\$1129

Hours: Mon.-Fri. 7 A.M.-9 P.M.
Sat.-Sun 8 A.M.-3 P.M.

ORDERS ONLY

1-800-359-4179

Circle 195 on reader service card

brother

Dot Matrices

M-1809 360 cps	\$335
M-1909 360 cps	\$425
M-1824L 270 cps	\$445
M-1924L 270 cps	\$565
HL-8e page printer	\$1575
HL-8PS post script printer	\$ CALL

Panasonic

Printers

KXP 1180 192 cps, 80 col., 9-pin	\$159
KXP 1124 192 cps, 80 col., 24-pin	\$289
KXP 1624 192 cps, 132 col., 24-pin	\$359
KXP 1695 330 cps, 132 col., 9-pin	\$399
KXP 4450 Laser, 11 pp. per minute	\$1299

ATI

Wonder Card 16 Bit, 256K, 1024 X 768	\$199
with Mouse	\$219
Wonder Card 16 Bit, 512K, 1024 X 768	\$225
with Mouse	\$245
Small Wonder 16 Bit, 256K, 640 X 480	\$145

9 LOCATIONS NATIONWIDE!

- Prices and availability subject to change without notice
- Not responsible for compatibility problems and types
- Purchase orders accepted from Fortune 1,000, Government institutions, schools and universities
- Minimum shipping charge is \$6.00
- Allow 14 days for personal checks to clear
- Due to Micro Professional's low pricing we cannot offer a free trial period. All returns will be exchanged for like product only, and must be in original box with all materials. Incomplete merchandise will not be accepted for return. Defective products will be repaired or replaced at Micro Professional's discretion.
- We do not charge your card until your order is processed
- All orders are shipped within 24 hours on stock items
- All non-defective products returned will receive a 15% restocking fee
- We ship to the 50 state, APO, FPO, AK and HI add 5% to the total order to cover PAL and insurance. No sales tax outside of IL



SOFTWARE

	ASHTON-TATE	
DB0010	DBase III Plus	\$447
DB0020	DBase IV	484
WP0030	Multimate 4.0	269

DATA BASE

BORLAND		
DB0050	Paradox 3	458
CLARION		
DB0190	Personal Developer	114
DB0200	Professional Developer	486

FOX SOFTWARE		
DB0080	Foxbase Plus	199
DB0086	FoxPro	478

MICRORIM		
DB0110	RBase Compiler	609
DB0120	Rbase for DOS 3.0	489

NANTUCKET		
DB0130	Clipper 5.0	508
PRECISION		
DB0210	Superbase 4 Windows	399

SYMANTEC		
DB0150	Q&A	229
WORDTECH		
DB0170	DBXL	144

FINANCE

COMPUTER ASSOCIATES		
FN0020	Accpac BPI modules	255
DAC SOFTWARE		
FN0030	Dac-Easy Bonus 4.0	175
FN0031	Dac-Easy Account 4.0	88
FN0032	Dac-Easy Payroll 4.0	59

INTUIT		
FN0050	Quicken 3	35
PEACHTREE		
FN0090	Complete III	153
FN0091	Double Bonus	229

TIMESLIPS		
FN0070	Time Slips III	172

Microsoft

SS0060	Multipan 4.2	129
IN0040	Works 2.0	98
PL0070	Basic Pro Dev Sys 7.0	329
PL0080	Macro Assembler	99
PL0090	C Compiler 6.0	328
PL0100	Cobol Compiler	594
PL0110	Fortran Compiler	299
PL0120	Quick Basic Compiler	65
PL0130	Quick C Compiler	65
PL0190	Quick Pascal Compiler	65
PL0205	Quick C/Quick Assm.	132
WP0120	Word 5.0	219

WINDOWS

WP0270	Ami Pro	317
GR0310	Corel Draw	343
CM0080	Crosstalk for Windows	124
UT0420	hDC Windows Express	53
UT0421	hDC First Apps	53
SS0050	Microsoft Excel	309
GR0200	Micrografx Draw +	278
GR0210	Micrografx Graph +	348
GR0220	Micrografx Designer 3	488
PM0060	PackRat 3.0	265
WP0010	Pagemaker 3.01	559
GR0292	PC Paintbrush Plus	87
IN0130	Powerpoint	339
PM0031	Project for Windows	469
DB0210	Superbase 4 Windows	399
WP0121	Word for Windows	327
PL0140	Windows Dev. Toolkit	331
UT0520	Windows 3.0	98
SS0080	Wingz for Windows	438

SPREADSHEETS

BORLAND		
SS0011	Quattro Professional	319
INFORMIX		
SS0080	Wings for Windows 3.0	439

LOTUS		
SS0042	1-2-3 Rel 3.0	419
SS0043	1-2-3 Rel 2.2	345

COMMUNICATIONS

CROSSTALK		
CM0080	Crosstalk for Windows	124
DASTARM		
CM0020	Procomm Plus	49

MICROCOM		
CM0030	Carbon Copy Plus	112

GRAPHICS-CAD

AMERICAN		
GR0010	DesignCad 2D	155
GR0011	DesignCad 3D	205

ALpc, INC.

SOFTWARE AND HARDWARE SPECIALS

1-800-955-ALPC

Orders Only 8:00am - 5:00pm PST Mon.-Fri.

For inquiries, international orders and customer service call:

(213)659-6053



This Month's Specials:

Lotus 1-2-3 3.0 (while supplies last)	\$375
EVEREX EVERFAX 124/96 int Fax/Modem	\$279
NEC Internal CD-ROM CDR-82	\$279
ADOBE Postscript Cartridge	\$319
CALERA Wordscan OCR Software	\$439

AUTODESK		
GR0420	Animator	245
COREL		
GR0310	Corel Draw	343

DIGITAL RESEARCH		
GR0120	Artline 2.0	343
GENERIC SOFTWARE		
GR0160	Generic CAD Level III	217

MATHSOFT		
GR0190	Mathcad	325
MEDIAGENIC/Z-SOFT		
GR0294	PC Paintbrush IV Plus	115

MICROGRAFX		
GR0200	Draw Plus	278
GR0210	Graph Plus	348
GR0220	Designer 3.0	488

PAUL MACE		
GR0390	Grasp	119
PC GLOBE		
GR0370	PC GLOBE	39
GR0380	PC USA	39
STSC		
GR0270	Statgraphics 4.0	577

THREE D GRAPHICS		
GR0400	Perspective Jr.	79

SPC SOFTWARE PUBLISHING		
GR0260	Harvard Graphics	312
NO0560	PS:First Choice	97
WP0180	PS:First Publisher 3.0	149

INTEGRATED SOFTWARE		
LOTUS		
IN0030	Symphony 2.2	495

PROGRAMMING		
BORLAND		
PL0010	Turbo Asm/Debug.	104
PL0020	Turbo Basic	69
PL0230	Turbo C ++	99
PL0240	Turbo C ++ Pro	164
PL0040	Turbo Pascal	104
PL0041	Turbo Pascal Pro	174

OPERATING SYSTEMS		
DIGITAL RESEARCH		
OS0060	Concurrent DOS 386	299

MSDOS-OS/2		
OS0010	MSDOS 3.3	75
OS0020	MSDOS 4.01	79
OS0070	IBM OS/2 v1.2	317

OS/2		
SS0080	PM Excel OS/2	345
OS0100	OS/2 Pres. Manager Toolkit	335
SS0080	Lotus 1-2-3/G	529
WP0015	Pagemaker OS/2	562
DB0220	Paradox OS/2	505
DB0123	RBase for OS/2	585
WP0225	Wordperfect OS/2	311

SCO		
OS0030	SCO Xenix 386	499

UTILITIES		
CENTRAL POINT		
UT0030	PC Tools Deluxe 6.0	97
DIGITAL RESEARCH		
UT0090	GEM/3 Desktop	32

GIBSON		
UT0150	Spinrite II	68
hDC		
UT0420	hDC Windows Express	53
UT0421	hDC First Apps	53

PETER NORTON		
UT0250	Advanced Utilities	97
UT0260	Norton Commander 3	84
UT0500	Norton Backup	101

QUARTERDECK		
UT0295	Desqview 386	127
UT0305	QEMM 386 5.0	58
SOFTLOGIC		
UT0510	Software Carousel 3.0	54

WORD PROCESSING		
DESKTOP PUBLISHING		
ALDUS		
WP0010	Pagemaker 3.01	559
IBM		
WP0280	Displaywrite V	253

WordPerfect		
WP0220	Wordperfect 5.1	269

SOFTWARE		
ASHTON-TATE		
DB0022	DBase IV LAN	651
ARTISOFT/LANTASTIC		
NT0140	Lantastic	312
FOX SOFTWARE		
DB0083	Foxbase Plus LAN	305
NT0080	FoxPro LAN	669

LOTUS		
NT0040	1-2-3 v2.2 Server	468
NT0050	1-2-3 v2.2 Node	232
NT0060	1-2-3 v3.0 Server	545
NT0070	1-2-3 v3.0 Node	310

PURE DATA		
NH0030	8 bit Arcnet	168
NH0040	16 bit Arcnet	366
NH0060	8 Port Active Hub	366
THOMAS CONRAD		
NH0260	8 bit Arcnet	103
NH0270	16 bit Arcnet	249

TIARA		
NH0070	Lancard/Arcnet 8 bit	99
NH0090	Lancard/Ethernet 8 bit	199
NH0110	Tw. Pair Ethernet 16 bit	336
NH0120	8 Port Active Hub	279
NH0160	4 Port Passive Hub	65

WESTERN DIGITAL		
NH0130	Ethercard Plus 8 bit	199
NH0190	Ethercard Plus 16 bit	259

ANCHOR		
MD0010	2400E (external)	129
MD0090	96E4 External w/MNP 4	726
EVEREX		
MD0020	Evercom 12 (internal)	57
MD0030	Evercom 24 (internal)	125
HAYES		
MD0050	Smartmodem 2400B	259
MD0055	V Series 9600B	589

WORDSTAR		
WP0300	Wordstar 6.0	289

XEROX		
WP0310	Ventura Publisher 3.0	589

HARDWARE		
LOGITECH		
FX0010	SCAN MAN PLUS PC	189
MO0020	Series 9 Serial (320 dpi)	74
MO0030	Series 9 Bus (320 dpi)	84

FAX/SCANNERS		
AMS		
FX0090	96/24 int Fax/Modem	269
INTEL		
FX0070	Connect. Coprocessor	569
EVEREX		
FX0100	124/90 int. Fax/Modem	279
THE COMPLETE PC		
FX0020	Complete Fax 4800	259
FX0040	Hand Scanner/400	165
FX0050	Half Page Scanner	195

MICE		
Microsoft		
MO0090	Bus w/Paintbrush	105
MO0055	Bus w/Windows 3.0	163
MO0050	Serial w/Paintbrush	109
MO0080	Serial w/Windows 3.0	163
MSC		
MO0060	PC Mouse II Bus/Paint	89
MO0070	PC Mouse II Serial/Paint	89

MODEMS		
ANCHOR		
MD0010	2400E (external)	129
MD0090	96E4 External w/MNP 4	726
EVEREX		
MD0020	Evercom 12 (internal)	57
MD0030	Evercom 24 (internal)	125
HAYES		
MD0050	Smartmodem 2400B	259
MD0055	V Series 9600B	589

NETWORKING		
WordPerfect		
WP0222	Wordperfect 5.1 LAN	169

SOFTWARE		
ASHTON-TATE		
DB0022	DBase IV LAN	651
ARTISOFT/LANTASTIC		
NT0140	Lantastic	312
FOX SOFTWARE		
DB0083	Foxbase Plus LAN	305
NT0080	FoxPro LAN	669

LOTUS		
NT0040	1-2-3 v2.2 Server	468
NT0050	1-2-3 v2.2 Node	232
NT0060	1-2-3 v3.0 Server	545
NT0070	1-2-3 v3.0 Node	310

PURE DATA		
NH0030	8 bit Arcnet	168
NH0040	16 bit Arcnet	366
NH0060	8 Port Active Hub	366
THOMAS CONRAD		
NH0260	8 bit Arcnet	103
NH0270	16 bit Arcnet	249

TIARA		
NH0070	Lancard/Arcnet 8 bit	99
NH0090	Lancard/Ethernet 8 bit	199
NH0110	Tw. Pair Ethernet 16 bit	336
NH0120	8 Port Active Hub	279
NH0160	4 Port Passive Hub	65

WESTERN DIGITAL		
NH0130	Ethercard Plus 8 bit	199
NH0190	Ethercard Plus 16 bit	259

ANCHOR		
MD0010	2400E (external)	129
MD0090	96E4 External w/MNP 4	726
EVEREX		
MD0020	Evercom 12 (internal)	57
MD0030	Evercom 24 (internal)	125
HAYES		
MD0050	Smartmodem 2400B	259
MD0055	V Series 9600B	589

WORDSTAR		
WP0300	Wordstar 6.0	289

XEROX		
WP0310	Ventura Publisher 3.0	589

HARDWARE		
LOGITECH		
FX0010	SCAN MAN PLUS PC	189
MO0020	Series 9 Serial (320 dpi)	74
MO0030	Series 9 Bus (320 dpi)	84

FAX/SCANNERS		
AMS		
FX0090	96/24 int Fax/Modem	269
INTEL		
FX0070	Connect. Coprocessor	569
EVEREX		
FX0100	124/90 int. Fax/Modem	279
THE COMPLETE PC		
FX0020	Complete Fax 4800	259
FX0040	Hand Scanner/400	165
FX0050	Half Page Scanner	195

MICE		
Microsoft		



ESTABLISHED 1976

Unitex, Inc.

MAIL ORDER DIVISION

Computer Systems and Hardware

SPECIALS

DFI Mouse

3-Button Mouse
with Selectable
Sensitivity
Software - up to
400 dpi

OUR PRICE
ONLY ...

\$35

Star Micronics

Dot Matrix Printer
180 cps, 34cps/nlq

NX1000/2

OUR PRICE
ONLY ...

\$159

360K Floppy Drives

Panasonic &
Mitsumi
XT Only DS/DD

OUR PRICE
ONLY ...

\$45

Samsung

Headstart VGA
Monitor-31 Dot
Pitch

OUR PRICE
ONLY ...

\$289

MODEMS



AND
HAYES
COMPATIBLE

EVEREX Evercom 12 Internal 1200 BAUD\$69
EVEREX Evercom 24 Internal 2400 BAUD\$129
EVEREX External 2400\$175

UNITEX 1200I Internal 1200 BAUD\$59
UNITEX 1200E External 1200 BAUD\$99
UNITEX 2400I Internal 2400BAUD\$79
UNITEX 2400E External 2400 BAUD\$129

FAX BOARDS



EZ-FAX

The most Highly functional, Fully loaded, Cost effective FAX board
manufactured.

CCITT Group III

Provides fully concurrent background operation. Allows user to transmit, receive
and view documents on screen. Once in memory, the transmissions may be
edited for retransmission, printed, stored for future, or discarded off your hard
drive. **SOFTWARE INCLUDED**

CAL 001FX (4800 baud)

Unitex Price **\$189**

SCANNERS

DEST PERSONAL SCAN Combines two of the best scanning platforms
into one, compact unit. Full page hand held and ten page sheet feed scanning in
one device. Perform "free-hand" scanning with the full page hand held unit-books,
maps, technical documents, oddly-shaped originals are easily scanned. Place
the hand held unit into the feeder base and automatically scan up to ten pages
at a time, within seconds.

The DEST Personal Scanned comes bundles with Recognizer, DEST's critically
acclaimed omnifont optical character recognition (OCR) software. Together
these innovative products offer the most cost effective, high accuracy OCR
solution available for the P.C.
300 dpi resolution, Half-tone scanning with 64 levels of gray.\$649

LOGITECH SCAN MAN Compatible with the Calculus EZ-FAX.
Scan man is a 1-400 Multi-Resolution Scanner. Real time screen image
generation while scanning. Using this hand scanner makes faxing your scanned
images a simple wave of the hand.

CAL 002BL

\$389

INCLUDES
CALCULUS
EZ-FAX

We Accept Purchase Orders from Qualified Firms,
Universities and Government Agencies

FROM ANY WHERE IN
THE U.S. & CANADA

1-(800)-533-0055

CALL for pricing on additional
FLOPPY DISK DRIVES, HARD DISK DRIVES,
PRINTERS AND MONITORS



**Check Out these Great
Computer Systems Buys !!**

UNITEX 386SX/16 COMPUTER SYSTEM

with 60MG Hard Drive & 14" Monitor

- 14" VGA Paper White Monitor
- VGA Board w/ 256
- Phoenix Bios.
- 1MG On/Bd Memory
- 1.2 Floppy Drive

- 60MB RLL Hard Drive
- 2 Serial Ports
- 2 Parallel Ports
- 1 Game Port
- 101-Key Click Keyboard
- 3 Button Mouse

OUR PRICE

\$1295

1 YEAR WARRANTY

SAMSUNG 286/12MHz COMPUTER SYSTEM

with 40MG Hard Drive Mono Card & Monitor

- 12mhz Motherboard with
CPU Intel 80286/12(zero wait state)
- 80387 Math Co-processor Socket
- Switchable Speed
- 8 Expansion Slots
- 1MB RAM
(Expandable to 8)

- 1.1 FD/HD Controller
- 1.2MB Floppy Drive
- 1 Parallel Printer Port
- 1 Serial Port (RS-232 Interface)
- 101-Key Enhanced Keyboard
- DOS 3.3
- 200 Watt Power Supply
- FCC Class B approved

OUR PRICE

\$949

1 YEAR WARRANTY

DFI COMPUTER SYSTEMS

*The New 386 Personal Computer Systems from DFI have some incredible
features that outperform machines that cost hundreds of dollars more! We
have the configuration with exactly the options you want.*

DFI-386-20

- 20MHz
- 1 MG RAM
- Floppy disk drive 1.2 or 1.44
- Fast IDE 1.1 hard/floppy drive controller

- Mono Card & Monitor
- 200 Watt Power Supply
- FCC Class B approved
- 101 keyboard
- 1 Year On-Site warranty

OUR PRICE

\$1159

DFI-386-25

- 25MHz
- 1 MG RAM
- Floppy disk drive 1.2 or 1.44
- Fast IDE 1.1 hard/floppy drive controller

- Mono Card & Monitor
- 200 Watt Power Supply
- FCC Class B approved
- 101 keyboard
- 1 Year On-Site warranty

OUR PRICE

\$1299

DFI-386-33

- 33MHz
- 1 MG RAM
- Floppy disk drive 1.2 or 1.44
- Fast IDE 1.1 hard/floppy drive controller
- Mono Card & Monitor

- 32K Cache Memory
- 200 Watt Power Supply
- FCC Class B approved
- 101 keyboard
- 1 Year On-Site warranty

OUR PRICE

\$2199

Add VGA card & Monitor...\$350

Add 40MG Hard Drive...\$275

TERMS AND CONDITIONS

Terms: Cash • MC or VISA - no surcharge
AMEX only add 4% handling fee
COD, Purchase Orders from qualified firms.
20% restocking fee on non-defective returns.
Prices subject to change.

SEND ALL MAIL ORDERS TO
P.O. Box 19772
Irvine, CA 92713

Mail Order Division & Retail Store

17222 Armstrong Ave. • Irvine, CA 92714

Phone: (714) 251-UNTIX(251-8 6 8 9)

Fax: (714) 251-8943

Mon - Fri 7am - 5pm
Sat 8am - 2pm

Retail Office

4025 S. Industrial Blvd.
Las Vegas, NV 89103
Phone: (702) 732-8689
FAX: (702) 732-0390

Mon - Fri 8am - 5pm
Sat 9am - 1pm



ESTABLISHED 1976

MAIL ORDER DIVISION

Computer Memory and Peripherals

SIMM/SIPP MODULES

	150ns	120ns	100ns	80ns	70ns	60ns
4MG X 9	---	---	---	\$415	\$385	---
1MG X 9	---	\$65	\$70	\$75	\$90	\$100
1MG X 8	---	\$62	\$67	\$72	---	---
256 X 8	\$16	\$24	\$39	---	---	---
256 X 9	---	\$21	\$24	\$27	\$39	---

D-RAM

	150ns	120ns	100ns	80ns	70ns	60ns
1MG X 1	---	\$6.00	\$6.75	\$7.25	\$8.00	---
256 X 1	\$1.80	\$2.00	\$2.25	\$2.75	\$3.25	\$3.75
256 X 4	---	\$5.50	\$6.50	\$7.00	---	---
64 X 1	\$1.25	\$1.85	\$2.49	---	---	---
64 X 4	\$2.25	\$2.50	\$2.75	\$3.50	---	---
256 X 4 Stat Col	---	---	\$15.00	---	---	---
256 X 1 Stat Col	---	---	\$2.25	\$3.00	\$4.25	---

286 MATH CO-PROCESSORS

	6MHz	8MHz	10MHz	12MHz	12.5MHz	20MHz
IIT (2087)	---	\$185	\$219	---	\$280	\$324
INTEL (80287)	\$120	\$183	\$208	\$280	---	---

8088 MATH CO-PROCESSORS

	5MHz	8MHz	10MHz
INTEL (8087)	\$88	\$115	\$165

386 MATH CO-PROCESSORS

	16MHz	20MHz	25MHz	33MHz	SX
CYRIX (83D87)	\$305	\$350	\$450	\$549	---
IIT (3087)	\$305	\$350	\$450	\$549	---
INTEL (80387)	\$305	\$350	\$450	\$549	\$290

MONTHLY SPECIALS

NEW! FAST PRODUCT

RAMvantage!

For 286/AT Systems. Split Memory Addressing. Does Backfill to 640K and extended memory up to 3MG. Uses 256 D-RAM. SuperPak Software only. **\$69**

SIX PAK 286

Up to 4 MB EMS 4.0 extended and/or expanded memory and does backfill to 640K. 1 serial, 1 par port avail. For AT & compatibles. Uses 256K or 1MG SIMMs. Headroom TSR Memory Management. Software included. with 8K. **\$119**
with 512K. **\$179**
with 4MG. **\$479**

RAMPAGE

PLUS 286

Up to 8MG Expanded Memory. Uses 256 x 9 or 1MG x 9 SIMMs. Supports LIMM 0 and OS/2. Up to 12.5MHz bus for AT (15 bit bus) with 8K. **\$319**
with 2MG. **\$529**

We Accept Purchase Orders from Qualified Firms, Universities and Government Agencies

FROM ANY WHERE IN THE U.S. & CANADA

1-(800)-533-0055



We Accept International Orders with fast delivery via DHL, Federal Express, Air Mail
INTERNATIONAL ORDERS: (714) 251-8689

MEMORY EXPANSION BOARDS

COMPAQ MEMORY

ADD-ON MODULES

MODEL	1MG	4MG
386/20/25/33/33E DESK PRO 286,386S	\$135	\$375
MODEL	2MG	8MG
386/33, 486/25 & SYSTEM PRO	\$320	\$2495

MEMORY EXPANSION BOARDS

MODEL	512K	1MG	2MG	4MG	8MG
386/16	\$425	\$675	\$1375	\$2495	---
386/20/25/33E 386S	\$250	\$725	---	---	---
Portable 386	---	---	\$1250	---	---
Portable LTE	\$219	\$325	\$495	---	---
SLT/286	---	\$279	---	---	---

MEMORY UPGRADE KITS

MODEL	512K	1MG	2MG	4MG
Portable III	\$70	\$278	---	---
DESKPRO 386/16	---	\$250	\$795	---



RAMQUEST 8/16 The only card expandable to 32MG. For IBM PCs, XT, ATs, PS/2 Model 30-286 as well as compatibles. Supports both 8 and 16 bit bus. Uses 256K, 1MG or 4MG Modules. w/ 8K. **\$269**

RAMQUEST EXTRA 16/32 The only 8-8MG, 9 wait state card for PS/2 mod 50, 60, & 80 which fully supports both 16 and 32-bit memory access. Includes 1 SER and 1 PAR port with free serial cable. EMS 4.0 and OS/2 compatible. Uses 256K and/or 1MG SIMMS. **\$299**

PRODESIGNER PLUS The fastest VGA on the market. Supports Windows 3.0. Supports 256 colors in 1024 X 768 resolution. **\$399**

BOCA RESEARCH

TOPHAT - Does backfill conventional memory from 512 to 640K on AT/ with 8K. **\$69**

TOPHAT II - Same as TophAT/ with 128K **\$85**

BOCARAM/XT Provides up to 2MG of expanded memory for 8 bit bus. Operates up to 12 MHz. Uses 256K D-RAM/ with 8K. **\$109**
with 512K. **\$169**

BOCARAM/AT Provides up to 2MG LIM EMS 4.0 and/or 4MG of extended, expanded or backfill memory. For 16 bit bus. Operates up to 16MHz. Uses 256K D-RAM/ with 8K. **\$109**
with 512K. **\$169**

BOCARAM/AT PLUS Provides up to 8MG of extended, expanded or backfill memory. Operates up to 33MHz and is set thru software. Uses 1MG D-RAM/ with 8K. **\$140**
with 2MG. **\$299**

BOCARAM/AT I/O PLUS Provides up to 4MG of extended, expanded or backfill memory. For 16 bit bus. Operates up to 33 MHz and is set thru software. Has serial and parallel port. Uses 1MG D-RAM/ with 8K. **\$165**
with 2MG. **\$319**

BOCARAM 30 Provides up to 2MG of expanded memory for IBM PS/2 model 25, 30 and 8-bit bus PC that utilize 3.5 in. floppy disks. Uses 256K D-RAM/ with 8K. **\$149**
with 2 MG. **\$269**

BOCARAM 50Z Provides up to 2MG, 0 wait state, expanded or extended memory for IBM PS/2 model 50, 50Z, 60. Uses 1MG D-RAM/ with 8K. **\$160**
with 2MG. **\$299**

BOCARAM 50/60 Provides up to 4MG expanded, extended or backfill memory for PS/2 model 50, 60. Uses 1MG D-RAM/ with 8K. **\$160**
with 2MG. **\$299**

WE WILL MEET OR BEAT ANY ADVERTISED PRICE !!!

ZENITH 386 SIMM MODULES

For Model	1MG	2MG	4MG
386/20/25/33/33E	\$110	\$269	\$599
386/SX	\$110	\$219	\$599

ZENITH EXPANSION CARDS

For Model	1MG	2MG
SuperSport SX/286E	\$269	\$425
SuperSport SX	---	\$425 (Alpha)
SuperSport SX	---	\$425 (Beta)

HEWLETT-PACKARD LASERJET MODULES

	0K	1MG	2MG	4MG
2 & 2D H-P Laserjet Modules	\$89	\$125	\$179	\$335
2P & 3 H-P Laserjet Modules	\$99	\$140	\$215	\$375

PS-2 PRODUCT

MODEL 70 & 80 SIMM

34F2933 - 4MG Memory Module for 55SX; 65SX
Memory Option IBM P/N 34F3077; 34F3011 **\$599**
6450372 - 2MG Module for 6450367 **\$449**
6450375 - 1MG Memory Bd for 80-041 **\$149**
6450379 - 2MG Memory Bd for 80-111; 311-121; 321 **\$320**
6450603 - 1MG Module for 70-E61; 121, Adaptor Board IBM P/N 6450605, 6450609, 34F3011 & 34F3077 **\$95**
6450604 - 2MG Module for 70-061; E61; 121, 50Z; 55SX; 65SX; P70 **\$185**
Adaptor Board IBM P/N 6450605, 6450609, 34F3011 & 34F3077 **\$175**
*10 or more units **\$175**
6450608-70 - 2MG Module for 70A21; A61; B21; B61 **\$295**
6450608 for Model 70A21 **\$185**
6451060 - 4MG Memory Bd for 80-A21; A31 **\$699**

MODEL 70 & 80 SIMM

1MG x 9 - 100ns **\$95**
30F5360 (Kit-2ea) **\$190**
256 x 9 - 120ns **\$36**
30F5348 (Kit-2ea) **\$72**

MEMORY EXPANSION BOARDS

6450605 - Memory Expansion Bd. **\$499**
1497259 - Memory Expansion Bd. **\$499**
34F3011 - Memory Expansion Bd. **\$949**

LAPTOP MEMORY

2MG Card-Toshiba Portable T1200e **\$445**
2MG Card-Toshiba Portable T1600 **\$275**
2MG Card-Toshiba Portable T3100SX **\$275**
4MG Card-Toshiba Portable T3100SX **\$625**
512K Card-Toshiba Portable T3100e **\$149**
2MG Card-Toshiba Portable T3100e **\$269**
2MG Card-Toshiba Portable T3200SX **\$299**
4MG Card-Toshiba Portable T3200SX **\$699**
3MG Card-Toshiba Portable T3200 **\$429**
2MG Card-Toshiba Portable T5100 **\$275**
2MG Module-Toshiba Portable T5200 **\$275**
2MG Module-Toshiba Desktop T8500 **\$349**

EPSON LASER PRINTER

Memory Upgrade for Model LP6000
1MG **\$299**
2MG **\$399**
4MG **\$529**
CAYON, FAGIT, FLUITSU AND TOSHIBA ALSO AVAIL

IBM LASER PRINTER

Memory Upgrade for Model 415/4015E
1MG **\$299**
2MG **\$399**
3.5MG **\$529**

NO SLOT CLOCK

Plugs in any empty ROM socket. Accurate to 1/100 sec. only **\$25 ea.**

6450604

Module for 70E61/121
50Z & 55SX
2MG x 8 - 80ns
1-8 UNITS
10 or more units **\$175**

ACCELERATORS

TINY TURBO 286 Low cost, high speed, half slot PC/XT - Accelerates your PC/XT with a 8MHz 80286 microprocessor. 80287 Math chip socket **\$229**

TINY TURBO XT/High-speed half slot accelerator for PC/XT - Accelerates your PC/XT up to 4 times faster with a 12 MHz 80286 microprocessor. 80287 Math chip socket **\$259**

D-RAM TESTERS

UNI-001 RT **\$119.00**
Tests all parameters except speed
64 x 1 / 256 x 1 / 1M x 1

UNI-002 RT **\$149.95**
Tests speed plus parameters

UNI-003 RT **\$199.95**
Tests standard SIMM Modules
256 X 8, 256 X 9, 1MG X 9, 1MG X 8
One Year Warranty

VIDEO ADAPTERS

ATI TECHNOLOGIES

VGA WONDER 512™ (512K video memory) High performance VGA graphics. 100% register-level compatibility in VGA - EGA, CGA, MDA and Hercules. Displays Super-VGA 800x600 in 256 colors and 1024x768 in 16 colors. Switchless installation. Includes Microsoft compatible mouse **\$299**

VGA WONDER 256™ (256K video memory, user upgradable) Same as VGA wonder 512™ except with 800x600 in 16 colors and 1024x768 in 4 colors. Includes Microsoft compatible mouse **\$249**

UNITEX

EGA CARD 640 X 480, 16 color, EGA/MGA/CGA/Hercules **\$89**

VGA CARD 1024 X 768, 16 color, VGA/EGA/MGA/CGA **\$119**

MONO CARD w/parallel port **\$25**
CGA CARD w/parallel port **\$25**

I/O XT 0241 For 8-bit bus. Has clock, parallel port, serial port, and optional 2nd serial port. **\$49**

I/O AT For 16-bit bus. Has parallel port, serial port, and optional 2nd serial port. **\$69**

I/O SER 2 Add 2nd serial port. to I/O AT or I/O XT **\$15.95**

BOCA MCA PARALLEL CARD Adds 1 parallel port to PS/2 System **\$69**

BOCA MCA SERIAL/PARALLEL CARD Adds 2 serial and 1 parallel port to PS/2 System **\$119**

EVEREX

RAM 3000 DELUXE Up to 3MG. Selectable memory addresses, Expanded Memory Specifications (EMS) 4.0 / OS/2. Can be used to backfill base memory up to 640K and the rest as expanded and/or extended memory. Uses 256K D-RAM **\$99**
With 512K **\$139**

RAM 8000 Up to 8MG capacity/support to base, extended or expanded memory in any combination. Fully compatible with Lotus, Intel, Microsoft, EMS 4.0, EEMS. Supports Multi-Tasking and DMA Multi-Tasking in hardware. Software configurable (no dip switches to zero). Full 16MG window for future expansion. Set wait state, uses 1MG D-RAM **\$239**

RAM 10000 Up to 10MG capacity/support to base, extended or expanded memory in any combination. Compatible with Lotus, Intel, Microsoft, EMS 4.0. Operates with no additional wait states. Uses 1MG D-RAM **\$159**

UNITEX

3 BUTTON MOUSE - Microsoft Compatible w/software included. **\$49**

384 Multifunction Card **\$89**
for PC/XT/Expands to 384K SER/PAR/CLK/ Game port. Uses 64K DRAM

Retail Office
4025 S. Industrial Blvd.
Las Vegas, NV 89103
Phone: (702) 732-8689
FAX: (702) 732-0390
Mon - Fri 8am - 5pm
Sat 9am - 1pm

TERMS AND CONDITIONS

No surcharge for MC or VISA
Terms: MC - VISA - C.O.D. - CASH - AMEX add 4%
Purchase Orders from qualified firms.
20% restocking fee on non-defective returns.
Prices subject to change.

SEND ALL MAIL ORDERS TO
P.O. Box 19772
Irvine, CA 92713

Mail Order Division & Retail Store

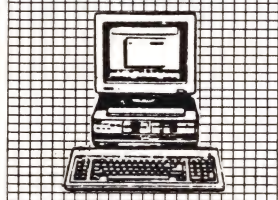
17222 Armstrong Ave. • Irvine, CA 92714
Phone: (714) 251-UNITX(251-8 6 8 9)
Fax: (714) 251-8943

Mon - Fri 7am - 5pm
Sat 8am - 2pm

Brothers

HOME/OFFICE COMPUTER CENTER

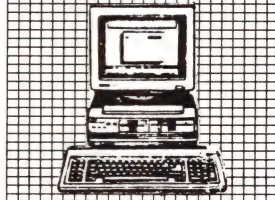
**ORDERS ONLY
CALL TOLL FREE
800-847-4039
FOR INFORMATION
212-695-4158
FAX IN YOUR ORDER
24 HOURS A DAY
212-695-0278**



PACKARD BELL PACKARD BELL FORCE 386 SX

CPU □ 80386SX 8/16 processor 0 wait state
STORAGE □ 40 MB-28MS H.D. w/1:1 interleave
RAM □ 1 MB RAM standard exp. to 4MB on motherboard
ROM □ 128KB with VGA bios
EXPAND □ 5 expansion slots 4-16 bit, 1-8 bit
FLOPPY DR. INSTALLED □ 1 5¼" 1.2MB, 1 3½" 1.4MB
INTERFACE □ 1 para. port, 2 serial ports, 1 mouse port
VIDEO □ VGA color video port installed
KEYBOARD □ AT style 101 sculpted keys, 12 func. keys
SOFTWARE □ Microsoft works, word, spreadsheet, database, telecommunications, graphics, desktop organizer
OPERATING SYS. □ DOS 3.3/6W basic, OS/2 comp.
DIMENSIONS □ Small foot print 17.7" wide x 16.3" deep x 6.3" high
WARRANTY □ 1 year on site warranty
FREE PROTEGY INCLUDED

DRIVE MONITOR	20 MB	40 MB	60 MB	100 MB
MONOCHROME	\$1500	\$1599	\$1799	\$2099
VGA MONOCHROME	\$1579	\$1679	\$1879	\$2179
CGA	\$1599	\$1699	\$1899	\$2199
VGA COLOR	\$1699	\$1799	\$1999	\$2299



COMPUTERS

AST
Bravo 286 w/640K, 5¼ F.D.D.\$899
Premium 286 w/514K, 5¼ F.D.D.\$1059
Bravo 386 SX w/2MB, F.D.D., VGA.\$1350
Premium 386 SX w/1 MB, F.D.D.\$1650
Premium 386/20 MHz w/1MB, F.D.D.\$2450
Premium 486/25 MHz w/4MB, F.D.D.\$4995

NEC
Powermate 386SX, 2 MB RAM, 40 MB H.D.D., VGA\$1995
Powermate 286+, 1 MB RAM, 20 MB H.D.D.\$1399

EPSON
Equity 1E w/1 MB RAM, F.D.D.\$779
Equity 2E w/1 MB RAM, F.D.D. 12 MHz\$1059
Equity 386SX 16 MHz w/1 MB RAM, 3½ FDD.\$1399

PANASONIC
FX1650 XT 10 MB, w/3½ F.D.D.\$479
FX1800 286 12 MB, w/3½ F.D.D.\$699

HEADSTART
H.S. III\$1479
H.S. 286 w/40mm, VGA\$899
Explorer w/mouse, stand, CGA monitor\$699
H.S. LXC.D. ROM\$1399

LAPTOP COMPUTERS SHARP LAPTOPS

4602 2 Drive B.L.\$999
MZ-100 2 Drive B.L.\$899
4641 CALL
5541 VGA, 40MD H.D. CALL

TOSHIBA LAPTOPS

T-1000 512K\$599
T-1000 SE 1 MEG\$1097
T-1000 XE\$1575
T-1200 HB Backlite 20M H.D.\$1649
T-1200 XE\$2658
T-1600 20/40 MB H.D.\$2249/\$2599
T-3100SX 40/80 MB H.D.\$3699/\$4399
T-3100C CALL
T-3200SX, 16 MHz, 40 M.B.\$3849
T-5100 CALL
T-5200 40/100 MB H.D. CALL

COMPAQ LAPTOPS

SLT 20/40\$3650/\$4100
LTE 20\$2099
LTE 286-20/40\$2999/\$3599

TOSHIBA MEMORY

2 MB T-1000SE\$479
2 MB T-1600\$349
2 MB T-3200E\$349
2 MB T-3100SX\$459
2 MB T-3200SX\$359

NEW SHARP PC5620
4 LBS., 286 AT, 1 MB
RAM, VGA GRAPHIC,
20 MB HARD DRIVE
ORDER NOW



ZENITH LAPTOPS

Mini Sport 1 MEG\$1199
Mini Sport 2 MEG\$1649
184-1 2 Floppy\$1199
184-2 20 MB\$1699
286 20 MB\$2199
286 40 MB\$2399
286e/20 MB\$2799
286e/40 MB\$2999
386 SX/40 MB\$3299

NEC LAPTOPS

Ultralite 2 MB\$1549
Pro Speed 286 20 MG\$2399
Pro Speed 286 40 MG\$2699
Pro Speed 386 40 MG\$3499

LAPTOP'S MEMORY UPGRADE

2 MB T-5100\$349
2 MB T-5200\$359
3 MB T-3200\$499
2 MB T-1200XE CALL
2 MB T-1000XE CALL

CALL FOR MODEMS, BATTERIES, EXTERNAL DRIVES, CAR CORDS, ETC.

MEMORY UPGRADES

MODEL	512K	1 MB	2 MB
AST BRAVO 286	\$ 99	\$289	\$539
AST PREMIUM 286	\$ 99	\$289	
AST PREMIUM 386		\$119	
AST PREMIUM 386 SX		\$ 99	
IBM PS/2M30	\$279		\$799
IBM PS/2M50			\$799
IBM PS/2M55SX			\$699
IBM PS/2M60			\$799
IBM PS/2M70		\$159	\$349
IBM PS/2M80		\$229	\$459
COMPAQ 386		\$249	
EPSON EQ 2+	CALL	CALL	CALL
EPSON EQ 2E	CALL	CALL	CALL
EPSON 386SX	CALL	CALL	CALL

FAX MACHINES

PANASONIC KXF-80\$545
PANASONIC KXF-100\$622
PANASONIC KXF-120\$780
PANASONIC KXF-220\$1025
PANASONIC KXF-170 CALL
CANON FAXPHONE 8\$490
CANON FAXPHONE 15\$534
CANON FAXPHONE 20\$692
CANON FAXPHONE 23\$810
CANON FAXPHONE 25\$903
CANON FAXPHONE 35\$857
TOSHIBA 3200/3400\$580/\$680
TOSHIBA 3600/3700\$705/\$830
SHARP UX-110\$480
SHARP UX-170\$650
SHARP UX-181\$590
SHARP UX-190/UX-200\$705/\$685
SHARP UX-350/UX-215\$955/CALL

**E. 45th & Lexington Ave.
466 Lexington Ave.
212-986-3323** Mon.-Fri. 8:30-8
Sat. 9-7 Sun. 10-6

HP LASERJET UPGRADES

1 MB Kit II, IID\$199
2 MB Kit II, IID\$279
4 MB Kit II, IID\$499
1 MB Kit IID\$199
2 MB Kit IID\$299
4 MB Kit IID\$489
1 MB III/2 P\$199
2 MB III/2 P\$249
4 MB III\$379

**PLEASE CALL FOR
UPGRADES FOR ZENITH,
IBM, AST, APPLE & COMPAQ**

WORD PROCESSORS

PANASONIC KXW-1500\$399
PANASONIC KXW-1510\$555
PANASONIC KXW-1000\$399
SMITH CORONA PWP-900\$349
SMITH CORONA PWP-1000\$299
SMITH CORONA PWP-2000\$329
SMITH CORONA PWP-2100\$349
SMITH CORONA PWP-3000\$423
SMITH CORONA PWP-3100\$459
SMITH CORONA PWP-5100\$459
SMITH CORONA PWP-7000\$525
SMITH CORONA PWP-100C CALL

**MANY OTHER MODELS
AVAILABLE, CALL**

**34th St. Bet. 6th & 7th
130 W. 34th St.
212-695-4158** Mon.,Thurs. Fri.10-8
Tues. Wed. Sat. 10-7:30
Open Sunday 10-6

PRINTERS LASER

HP DeskJet Plus\$599
HP IIP\$999
HP LaserJet III\$1599
EPSON EPL-600\$939
PANASONIC KX4450\$1299

OTHER QUALITY PRINTERS STAR PRINTERS

NX-1000 II\$159
NX-1000 RAINBOW\$218
NX-1000/1500\$339/\$429
NX-2410/NX-2415\$279/\$399
XB-2410/2415\$449/\$569

NEC PRINTERS

P-5200\$469
P-5300\$639
P-2200XE\$299

PANASONIC PRINTERS

KX-1180 192/38 cps\$159
KX-1191 240/48 cps\$289
KX-1124 192/48 cps\$269
KXP-1524\$499
KXP-1624\$349

EPSON PRINTERS

LQ 510\$279
LX 810\$169
FX 850\$299
FX 1050 CALL
LQ 850\$459
LQ 1050\$599
LQ 1010 CALL
LQ 2550\$869
LQ 860 CALL
LQ 950\$459
AP2000/4000\$299/\$399
L-750/T-750\$499/\$399

CANON PRINTERS

BJ J130\$569

PRINTER & TYPEWRITER RIBBONS

5 PACK
EPSON LQ500-850\$32.20
EPSON LQ1000-1050 39.50
EPSON FX/MX/RX 70-90\$26.01
EPSON LX 80-90 Homewriter\$22.59
PANASONIC KXP-1080-1092\$46.26
PANASONIC KXP-1124-1180\$46.26
PANASONIC KXP-1524/16 CALL
OKIDATA 182/192/193\$541.40
OKIDATA 320-391 CALL
IBM PROPRINTER X24/4207 33.25
IBM PROPRINTER XL 53.19
STAR NX2400\$40.50

5 PACK
STAR NX1000\$29.61
STAR NX-10\$45.99
SEIKOSHA SL80A, SP800/1000/1200\$38.34
APPLE IMAGEWRITER II Color\$72.27
NEC P5200/5300 CALL
NEC P2200/5300 CALL
NEC PC8023-8027\$30.87
BROTHER AX/Correctronic\$19.26
BROTHER EXEC HR/CE/Compacronic\$19.26
BROTHER 1409-1709\$35.55
BROTHER M1009-1109 CALL
SCM H Series\$47.61
PANASONIC KXR/RKT\$19.26

ORDER 5 AND GET 1 FREE

**52nd St. & Lexington Ave.
599 Lexington Ave.
212-888-2090** Mon.-Fri. 8:30-8
Sat. 9-7 Sun.10-6

**IBM PERSONAL SYSTEM II
ALL MODELS AVAILABLE
CALL FOR LOW PRICE**

FOR ORDERS ONLY CALL TOLL FREE 1-800-847-4039

All major credit cards, checks and P.O. accepted w/approval. Price and availability subject to change without notice. Returns will not be accepted without return authorization no. NY State residents add sales tax. Add 5% for shipping & handling. This ad supersedes all others. Quantities may be limited. Not responsible for typographical errors. Licensed by D.C.A. of N.Y.C. License # 800695, 800278 & 831863.

The World's BEST 101 Programs

The World's BEST User-Supported Software for IBM PC Compatibles
 Programs Run from Gold Hill's Exclusive Menu System—Just Type GOLD
 Same-Day Shipping • UPS 2-Day Air Available for only \$3 More
 Toll-Free Order Line • Visa/MasterCard Accepted • FREE Catalog
Unconditional Money-Back Guarantee!!



Act Now!!

3 FREE DISKS*

Limited Time!!

BUSINESS

- ☐ **Express Graph** (1106) Turns raw data into great business graphics.
- ☐ **Financial Consultant** (1600) An effective money management system.
- ☐ **Blakbook** (1603) Great for keeping track of addresses and phone numbers. Prints an address book.
- ☐ **Form Letters** (1607) 100 business and legal forms (contracts, employment applications, filings, etc.).
- ☐ **PC-Payroll** (1608,1609) A complete and powerful payroll system. (2 disks)
- ☐ **Stock Charting** (1612) A complete stock charting and analysis package.
- ☐ **Small Business Accounting** (1617) A must for all small business owners!
- ☐ **PC-Books** (1621) A complete, easy to use bookkeeping system.
- ☐ **PC-Loans** (1628) This package supports all common loan methods.
- ☐ **Easy Project** (1629) A powerful project manager software package.
- ☐ **FormGen** (1630) Design and print any office form, easily!
- ☐ **Employee Management** (1641) A shockingly accurate employee personality test that helps lower turnover.
- ☐ **Bill** (1642) Complete time & billing program. Automates all your billing.

DATABASE/MAIL LIST

- ☐ **File Express** (1700,1701) A powerful, easy to use database (2 disks).
- ☐ **PC-File 5.0** (1705-1707) The most powerful database program available for under \$200! (3 disks) **HD \$12K**
- ☐ **Catalist** (1711,1712) A professional mail list manager. (2 disks)

SPREADSHEETS

- ☐ **PC-Calc+** (1800-1802) The most powerful spreadsheet package for under \$200! (3 disks) **\$12K**
- ☐ **As-Easy-As** (1805) FANTASTIC Lotus 1-2-3 compatible spreadsheet.
- ☐ **Lotus Macros** (1807) A large collection of Lotus macros and templates.
- ☐ **On-Side** (1506) Prints your spreadsheet (or any file) sideways!

EDUCATION

- ☐ **Spanish I & II** (1205,1206) Test and train with these excellent Spanish vocabulary drills (2 disks).
- ☐ **Geography** (1215) Learning is fun with this great geography trivia game.
- ☐ **Funnels & Buckets** (1219) A fun math learning game that kids love to play!
- ☐ **World** (1221) A computer encyclopedia of global information. **CGA**
- ☐ **Typing Tutor** (1224) Helps you improve your speed and skill. **CGA**
- ☐ **Balloon Speller** (1230) An introduction to spelling for children. **CGA**
- ☐ **Math Lessons** (1233) A great program that teaches algebra. **CGA**
- ☐ **Facts 50** (1234) A graphic geography lesson of the U.S. **CGA**
- ☐ **Computer Tutor** (1235) Become a more effective computer user.
- ☐ **Presidents** (1240,1241) Learn much about the U.S. Presidents. (2 disks)
- ☐ **School Mom** (1251) Teaches kids (2-14) the basics of art, music, spelling, English and math. FANTASTIC!

WORD PROCESSING

- ☐ **PC-Write Macros** (1850) 100 great macros. For PC-Write users only.
- ☐ **PC-Write 3.03** (1851-1853) The BEST word processor for under \$200! Complete w/spell checking. (3 disks) **\$12K**
- ☐ **PC-Type+** (1870-1872) Complete word processor with 100,000 word dictionary and mail merge. (3 disks)

WORD PERFECT 5.0

- ☐ **WP 5.0 Macros** (1857) Several macros for Word Perfect 5.0+ users.
- ☐ **WP 5.0 Learning Sys.** (1863,1864) Helps you learn to use or become a better Word Perfect 5.0 user. (2 disks)
- ☐ **ClipArt** (1875,1876) A huge collection of art/graphics for Word Perfect 5.0+.
- ☐ **Menus & Mice** (1877,1878) Menu systems and mouse drivers for WP 5.0+.

HOME and FAMILY

- ☐ **CheckMate** (1102) A complete checkbook manager. Handles unlimited accounts and does reconciliation.
- ☐ **Home Budget Manager** (1103) Tracks all your household expenses and helps you to set budgets and goals.
- ☐ **Home Inventory** (1105) Keeps track of all your personal property.
- ☐ **Brother's Keeper** (1120,1121) A great genealogy program that allows you to trace your family history (2 disks).

GRAPHICS/PRINTING

- ☐ **Banner Maker** (1502) Prints banners in various sizes, styles, and fonts.
- ☐ **PrintShop Graphics** (1503) A large collection of Printshop clip art.
- ☐ **PC-Art** (1509) A color graphics painting/drawing package. **CGA**
- ☐ **Epson Utilities** (1514,1515) Enhance the print quality of your Epson-compatible printer. (2 disks)
- ☐ **PC-Key Draw** (1520-1523) Powerful CAD design system. Works with mouse or keyboard. (4 disks) **CGA**
- ☐ **City Desk** (1525) Simple desktop publishing for newsletters.
- ☐ **Charts Unlimited** (1531) A design tool for creating any kind of chart. **CGA**
- ☐ **PC-Draft** (1533,1534) A high-quality drawing program. (2 disks) **CGA**
- ☐ **Amazing Labels** (1547) Create and print graphic address labels.

MISC. APPLICATIONS

- ☐ **Bowling League Secretary** (1308) Manages your league and keeps stats.
- ☐ **Personal Biorhythm** (1310) Will display or print a personal chart.
- ☐ **KwikStat** (1314,1315) A professional statistics package. (2 disks)
- ☐ **Wisdom of the Ages** (1316-1319) Over 6000 great quotations from the greatest minds of history. (4 disks)
- ☐ **Bible-Q** (1551) Test your Biblical IQ!
- ☐ **Church Database** (1554) Automates record keeping for churches.
- ☐ **SeedMaster** (1555-1567) The complete King James version of the BIBLE on disk! (13 disks) **HD**
- ☐ **Make My Day** (1627) Puts you in control by organizing your time!
- ☐ **Piano Man** (1901) Compose and edit music or play the keyboard.

UTILITIES

- ☐ **PC-DeskTeam** (1406) Several useful desktop accessories (clock, calendar, calculator, notepad, etc.).
- ☐ **Automenu** (1409) A very professional hard disk menu system. Run any of your programs from a custom menu.
- ☐ **Space Maker** (1412) This utility allows you to fit more data on any disk.
- ☐ **ALT** (1413) It's like Norton Utilities, the Sidekick desktop accessories, and a menu program all in one!
- ☐ **HD Backup** (1415) Allows you to backup/restore all the data on your hard drive with floppy disks. **HD**
- ☐ **NewKey** (1416) Save time and increase efficiency by using this (the BEST) keyboard macro program.

GAMES

- ☐ **AdventureWare** (1934) Five excellent adventure games.
- ☐ **Armchair Quarterback** (1905) A fun football strategy game.
- ☐ **Baseball** (1916) Great arcade action and baseball strategy. **CGA**
- ☐ **Bridge Pal** (1911) Play bridge anytime!
- ☐ **Crime Lab** (1955) Play this exciting graphic murder mystery game. **CGA**
- ☐ **Ed's Chess** (1919) An excellent chess opponent. It can beat the expensive chess simulators and most people!
- ☐ **18-Hole Miniature Golf** (1915) Kids really love this one! **CGA**
- ☐ **Flightmare** (1923) Futuristic fighter pilot arcade game. **CGA**
- ☐ **Kid Games** (1938) These games are both fun and educational. **CGA**
- ☐ **Kingdom of Kroz** (1952) An excellent, award-winning adventure game.
- ☐ **Las Vegas Style Craps** (1914) Play and improve your skill. **CGA**
- ☐ **McMurphy's Mansion** (1966) Search a spooky Scottish castle for treasure.
- ☐ **Miramar Flight Simulator** (1967) You command a fully armed F-18. **CGA**
- ☐ **No Graphics!** (1979) A collection of fun arcade games that don't require graphics. (Works on every system.)
- ☐ **PAC-Man & More!** (1930) PAC-Man and Ms. PAC-Man clones. **CGA**
- ☐ **PC-Gammon** (1907) Play a tough computer opponent, anytime. **CGA**
- ☐ **PC-Pro Golf II** (1975) Choose your club and swing away at one of the world's most beautiful country clubs (Amherst). Excellent graphics! **CGA**
- ☐ **Pinball** (1941) Great sound and fast play on 5 different "machines." **CGA**
- ☐ **Scrabble** (1957) Test your word power with this always fun game. **CGA**
- ☐ **Sleuth** (1903) Play detective in this "Who done it?" adventure.
- ☐ **Sports Games** (1927) Bowling, archery, and pool. **CGA**
- ☐ **Star Trek** (1948) Two versions for all you TREKies out there.
- ☐ **Strategic Games** (1926) Fight on land and sea in this war simulation.
- ☐ **Striker** (1904) Helicopter attack and rescue arcade game. **CGA**
- ☐ **Tommy's Trivia** (1949) Test your knowledge in several categories.
- ☐ **Tune Trivia** (1968) A very fun version of "Name That Tune."
- ☐ **Video Poker/Ultima 21** (1945) The BEST poker and blackjack games!
- ☐ **Wheel of Misfortune** (1935) Like TV's Wheel of Fortune game.

EGA GAMES

(The following require EGA monitors)

- ☐ **Bass Tour** (1925) An amazing game with excellent graphics. Fish in your choice of lakes. Very realistic. EGA
- ☐ **Captain Comic** (1961) The BEST arcade game ever! Superior graphics! EGA
- ☐ **EGA Arcade** (1965) EGA versions of Asteroids and Breakout. EGA
- ☐ **EGA Coloring Book** (1963) A graphically beautiful and easy-to-use coloring program that kids love! EGA
- ☐ **EGA Football** (1928) You call the plays and control the action! EGA
- ☐ **EGA Golf** (1929) A challenging golf game with beautiful graphics. EGA
- ☐ **EGA Star Trek** (1951) You control the Starship Enterprise in this, the ULTIMATE Star Trek game! EGA

IMPORTANT

CGA=Requires Color Computer
HD=Requires Hard Drive
\$12K=Requires 512K RAM
 For multi-disk sets,
 count all disks in set.

* When you order and pay for 5 or more disks, select an additional 3 disks FREE (limit 3 free disks per order).

Name _____
 Address _____
 City _____
 State _____ Zip _____
 Phone (____) _____
 Visa/MC # _____
 Exp. Date ____/____/____
 Signature _____
 Disks Ordered _____
 x\$2.49 or \$1.99 ea. \$ _____
☐ Need 3 1/2" disks?
 If so—add \$1 per each
 (including free disks) \$ _____
 Packing/Handling Charge \$ 3.00
 Foreign Shipping Charge
 (Canada \$2/Other \$4) ... \$ _____
☐ COD (U.S. only)
 add \$4 if you require COD\$ _____
☐ UPS 2-Day Air—add \$3
 (Continental U.S. only) ... \$ _____
 TOTAL \$ _____
☐ Check/MO ☐ Visa/MC ☐ C.O.D.



P.O. Box 663
 Gold Hill, OR 97525



ORDER TODAY
1-800-234-6467

We Never Underestimate the Power of Your Laser Printer



Why Should You?

At Pacific Data Products, we're continuously looking for ways to increase the power and versatility of your laser printer. Shouldn't you be doing the same? A good place to start is with Pacific Data's complete line of laser printer enhancements.

25 Cartridges in One! and 25 in One! III 172 fonts and symbol sets from 25 different cartridges. Provides fast and easy, yet economical access to fonts for almost any application - like

word processing, presentation graphics, and spreadsheet publishing. For HP and Canon laser printers.

Headlines in a Cartridge 18 large sized Helv and Tms Rmn style fonts in those sizes most commonly used for display - 14, 18, 24, 30, 36 and 48 points. Ideal for newsletters, presentation graphics, and proposals. For HP and Canon laser printers.

Pacific Page PostScript language emulation cartridge for the HP LaserJet Series II. Simply plug the cartridge into the printer and gain immediate access to the high quality output of a PostScript printer. Pacific Page P•E offer the same high quality output for the Laser Jet IIP, IID and III.

Pacific MacPage PostScript language emulation cartridge for the LaserJet Series II when used with the Apple Macintosh. Provide Macintosh users with a low cost, easy to use alternative to expensive PostScript printers. Includes cartridge, serial cable and printer drivers. Pacific MacPage P•E is for the LaserJet IIP, IID, and III.

Plotter in a Cartridge Emulates HP-GL on the HP LaserJet Series II. Produces precise, high resolution graphics in a fraction of the time required by pen plotters or PC-based emulations. Plotter in a Cartridge P•E is for the Laser Jet IIP and IID.

PacificPrint Networking software option for PacificPage and Plotter in a Cartridge. User's can turn their networked HP LaserJet printers into PostScript or HP-GL compatibles, while continuing to use them in their native PCL mode.

1-2-4 Plus Upgradeable memory board for HP and Canon laser printers. Simply plug in 1, 2, or 4, MB of additional printer memory as needs and applications change.

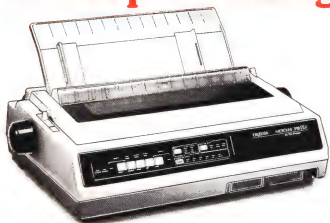
2 Plus 2 Upgradeable memory board for the HP LaserJet IIP and III. Each board can be configured with 1 or 2 MB of memory. If applications demand 3 or 4 MB, simply add another board to the printers second memory slot.

LP Memory Upgradeable memory board for the IBM Laser Printer 4019. The board uses 1 megabyte memory chips and can be assembled with 1, 2, or 3.5 MB or extra printer memory.

25 Cartridges in One!, 25 in One! III, Headlines in a Cartridge, PacificPage, Pacific MacPage, PacificPrint, Plotter in a Cartridge, 1-2-4 Plus, 2 Plus 2, and LP Memory are trademarks of Pacific Data Products, Inc. All other company and product names are trademarks of the company or manufacturer respectively. Copyright 1990 by Pacific Data Products, Inc. Made in the U.S.A. by Pacific Data Products, Inc.

Call **BULLDOG** for Special Pricing!

Tank Tough™ Versatile Desktop Printing



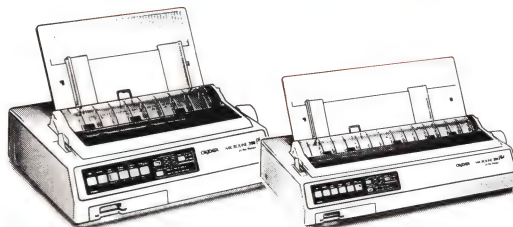
Letter Quality Office Printing With MICROLINE® 390 and 391 Plus

- Exceptional paper-handling for executive letters, labels, data processing reports, multi-part forms and envelopes.
- Paper park and bottom feed.
- Blistering speeds: 270 cps Utility and 90 cps Letter Quality.
- 6 resident letter quality fonts.
- Epson® LQ/IBM® X/24 co-resident emulations.
- 24-pin for letter quality printing.
- Front panel control of fonts, pitches, more.

OKIDATA®

Call **BULLDOG** for Special Pricing!

Tank Tough™ High Volume Office Printing



The Whole Office Can Rely on MICROLINE® 393 Plus

- The "Workhorse" of letter quality printers (24-pins for crisp output).
- Handles all kinds of office documents - executive letters, labels, data processing reports, multi-part forms and envelopes
- Paper park and bottom feed.
- Fastest in its class - with 4 speeds - up to 520 cps.
- 4 resident letter quality fonts.
- Film ribbon option for ultimate printing.
- Co-resident Epson® LQ/IBM® X/24 emulations.
- Co resident parallel and serial interface.

OKIDATA®

Call **BULLDOG** for Special Pricing!

OKIDATA and MICROLINE are registered trademarks of Oki Electric Industries Co., Ltd. Marque deposée Oki Electric Co., Ltd. TANKTOUGH is a trademark of Oki America, Inc. The following are registered trademarks: Epson, Seiko Epson Corp., IBM, International Business Machines, Inc.

OKIDATA and MICROLINE are registered trademarks of Oki Electric Industries Co., Ltd. Marque deposée Oki Electric Co., Ltd. TANKTOUGH is a trademark of Oki America, Inc. The following are registered trademarks: Epson, Seiko Epson Corp., IBM, International Business Machines, Inc.

SALES HOT LINE 1.800.438.6039

Hours: Monday thru Friday 8:30 a.m. to 7:30 p.m.
Saturday 9:00 a.m. to 4:00 p.m.





LET BULLDOG SHOW YOU A HARVEST OF AUTUMN DEALS!

BULLDOG SYSTEMS

286 12 MHz	
1 mg Ram, 1.2 floppy	\$699
286 16 MHz	
1 mg Ram, 1.2 floppy	749
286 20 MHz	
1 mg Ram, 1.2 floppy	819
386 20 MHz	
1 mg Ram, 1.2 floppy	1155
586 25 MHz	
1 mg Ram, 1.2 floppy	1215
386-25 CACHE	
4 mg Ram, 1.2 floppy	1895
386-33 CACHE	
4 mg Ram, 1.2 floppy	2250
486-25 CACHE	
4 mg Ram, 1.2 floppy	3199

FREE shipping on all **BULLDOG** systems prepaid with a Cashiers Check, Money Order or Bank Wire!

IBM

PERSONAL SYSTEM 2	
Model 70 Portable 60/120	5585/5995
Model 30 286 w/20mb	1775
Model 50 30/60	2119/2495
Model 70 60/120	3989/4639
Model 80 40/70	3569/3999
Model 80 300	6799
Model 55 SX 30/60	2695/2999

COMPAQ

286 Desk Pro 12 mhz	1629
III 20/40	3595/4289
286E 40/100	2450/2999
386S 1/40	2350/3049
386-25 110/300	6529/8695
386 20E 40/110	4395/4995
Port. 386 40/100	5080/5795
SLT 20/40	3985/4349

AST SYSTEMS

AST Premium 286 Model 70	1075
AST Premium 386 Model 300C	2899

LAPTOPS

<i>You can take these lightly!</i>	
Toshiba 1000	655
Toshiba 1000SE	1159
Toshiba 1000XE	1825
Toshiba 1200HB	1939
Toshiba 1200XE	2769
Toshiba 1600 20/40	2550/3129
Toshiba 3100SX 40/80	4149/4730
Toshiba 3100E 40	2979
Toshiba 3200/3200SX	2999/4239
Toshiba 5200 40/100	4915/5339
Panasonic CF 150B	765
Atari Portfolio Palmtop	339

Pacific Rim external drives available for most Laptops - Call for prices!
Kingston Memory for most Systems.
Call for pricing!

FAX

Quadfax 96 Fax Board	229
Toshiba 3200	665
Toshiba 3400	795
Toshiba 3600	825
Toshiba 3750	925
Everex 24/96 int./ext.	\$265/319

PRINTERS

EPSON	
LX 810	\$173
FX 850	299
FX 1050	399
LQ 510	275
LQ 850	459
LQ 950	469
LQ 1010	409
LQ 1050	599
LQ 2550	859
EPL 6000	799
LQ 860	549
DICONIX	
Diconix 150+	345
OKIDATA	
172	199
182 Plus	229
320/321	339/469
380	359
390 Plus	459
391 Plus	639
393 Plus	989
393 Color Plus	1069
TOSHIBA	
Express 301/311	239/270
NEC	
2000 XE	265
6200	SPECIAL
6300	SPECIAL
PANASONIC	
1124	279
1180	169
1191	229
1624	349
1695	399
4420	899
4450i	1199
HEWLETT-PACKARD	
Laser Series II	1269
Laser Series III	1599
Laser II D	Call
Laser II P	999
Desk Jet/Desk Jet Plus	579/739
LASER ACCESSORIES	
Pacific Data 1 mb/2mb	259/359
Pacific Data 25-N-1 for HP/II/HP/III	259/309
Pacific Page	439
Pacific Page for II P	359
Plotter in a Cartridge	239
Plotter in a Cartridge IIP	239
Headlines in a Cartridge	199
Pacific Print	219
CANON	
BJ 130E	659
LB P4	955
LBP 8 III	1799
BJ 10E	339

MODEMS

<i>The Great Communicators!</i>	
Everex 1200 int.	69
Everex 2400 int./ext.	110/169
Everex 2400 ext. w/mp	199
Hayes 1200B/2400B	199/289
Hayes 1200/2400	295/345
Megahertz 24 for Zenith	139
Megahertz 24 for Toshiba	149
Practical Per. 2400 int.	127
US Robotics 2400/9600	139/635
ViVa 24 int./ext.	79/110

GRAPHIC CARDS

Everex Micro Enhancer	\$99
Genoa Super Hi Res.	145
Genoa 6300	199
Genoa 6400	255
Hercules Graphics Card	185
Hercules InColor	159
Hercules VGA	125
Orchid Peanut	139
Orchid Pro Designer w/256K	249
Orchid Pro Designer w/512K	299
Orchid Pro Designer II w/512K	279
Paradise Auto Switch 480	99
Paradise VGA Plus	135
Paradise VGA Plus 16	169
Paradise VGA Professional	249
STB Multi Res II	155
Vega VGA	139
V Ram w/512K	349
Video 7 VGA 1024i/256K/512K	205/235
ATI Wonder EGA 800 +	129
ATI VGA w/256K/512K	245/295
NEC Graphics Engine 256K	935

TAPE DRIVES

Everex 40 mb int.	285
Everex 60 mb int./ext. Teac	595/699
Everex 60 mb int./ext. Wangtech	709/799
Archive 40 mb int./ext.	249/409
CMS 60 mb int./ext.	565/639
CMS 150 mb internal	799
external	865
Archives FT 60 int. or ext. w/card	955
COLORADO MEMORY SYSTEMS	Call!

NETWORK

ARC Net PC 130	99
ARC Net PC 130E	129
ARC Net Active Hub/Passive Hub	289/79
ARC Net PC 500FS	305
ARC Net PC 500WS	235
Western Digital Ethernet Plus	179
Gateway 3 Com, Thomas Conrad and Western Digital	Call for Price!

DRIVES

Conner 40/110	389/649
Seagate 20mb w/contr. ST225	239
Seagate 30mb w/contr. ST238	259
Seagate 40mb for AT ST251-1	275
Seagate 80mb ST 4096	549
Ext. Drives for PS/2 360/1.2	179
Toshiba 3-1/2" 720K int.	79
Toshiba 3-1/2" 1.44mb int.	89
Toshiba 5-1/4" 360K int.	75
Toshiba 5-1/4" 1.2mb int.	79
Bernoulli Box II 5-1/4" 20mb int.	989
20mb ext. w/card	1259
dual 20 mb ext. w/card	1939
44mb internal w/card	1169
Plus Hard Card 40	549
Plus Hard Card 20	489
Plus Hard Card II 40/80	389/689

MICE & MISC.

Microsoft Mouse w/windows	145
Microsoft Mouse w/PC Paintbrush	109
Mousesystems Mouse	89
Logitech Scan Man	179
Logitech Series 9 Serial	69
Logitech Series 9 Bus	79
Logitech Track Man Serial	99
Logitech Track Man Bus	99

SOFTWARE

Aldus PageMaker	\$495
Clarion ProDeveloper	469
Clipper 5.0	469
Dbase IV	499
Enable O/A	425
Foxbase	195
Freelance Plus	335
Framework III	455
Harvard Graphics	315
IBM DisplayWrite V	255
Lotus 2.01/2.2	299/345
Lotus 3.0	389
Lotus Symphony	489
Microsoft Word	219
Microsoft Excel	299
Multimate 4.0	249
Peachtree III Complete	145
Paradox	449
Q & A	235
Super Calc V	299
Ventura Desktop Publ.	535
Word Perfect 5.1	254
WordStar 5.5	199
WordStar 2000 +	299
Peachtree Double Burns	219
Microsoft Windows 3.0	109
Lots of other software available and all the prices are byte size!	

MULTI FUNCTION BOARDS

AST 286 6 Pack w/512K	206
AST 6 Pack Plus w/384K	145
AST 5251-11 Enhanced	519
AST Rampage 286	395
Everex Mini Magic w/o K	75
Intel Above Board w/512K	359
Intel Above Board I/O w/512K	379
Intel Inboard 386 w/adaptor	985
Intel Inboard 386 for PC w/1 mb	529
Intel Above Board II Plus for PS/2 w/o K	299
Irma Board III	415
Logical Connection 256/512K	386/465
Orchid Ramquest 16/32 w/o K	289
Orchid Ramquest 8-16 w/1 meg.	329
Orchid Tiny Turbo 286	205
Orchid Tiny Turbo Extra	359
Orchid Tiny Turbo AT	359
Expanz	159

MATH CO-PROCESSORS

<i>We've got your number!</i>	
8087-3	99
8087-2	119
80287-8	189
80387-10	209
80387-16	319
80387-20	369
80387-25	559
80387-33	289
80387-SX	449
1mb Simm 80NS	68
256K Simm 80NS	22
Simm, Dram and Sipp	Call

MONITORS

<i>Get The Picture!</i>	
NEC	
MULTISYNC	
2A	499
3D	659
4D	1150
5D	2350
IBM	
8503	229
8512	499
8513	579
PRINCETON	
MAX 15	Call
Ultra 16	869
Ultra 14	549
MAGNAVOX	
Amber 776	89
RGB80 8762	255
EGA 9CM053	365
MITSUBISHI	
Diamond Scan	499
HL6605-15"	1225
HL6905-19"	2050
ZENITH	
1492	629

All prices are cash prices! Retail outlet may have slightly higher prices.

Policy: Add 3 1/2% (minimum \$11) shipping and handling. Larger shipments may require additional charges. Personal checks require 2 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Georgia residents add sales tax. All prices are USA prices and are subject to change and all items are subject to availability. Defective software will be replaced with same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee. All returns must be assigned an RMA number for return authorization. Call (404) 860-8899.

WE ACCEPT w/Approved Credit



SALES HOT LINE 1.800.438.6039

International Customers: 1.404.860.7364
FAX: 1.404.860.7358

C.O.D.



BULLDOG COMPUTER PRODUCTS

3241-E Washington Road • Martinez, Georgia 30907
HOURS: Monday thru Friday 8:30 a.m. to 7:30 p.m.
Saturday 9:00 a.m. to 4:00 p.m.

Unrivaled Selection, Unbeatable Prices, Guaranteed Compatibility*

Is There Anything We Missed?

PS 410 **QMS** PS 810 TURBO

Features

- 4 pages per minute
- Apple Talk, RS-232 Serial, and parallel interfaces
- Comes standard with 2 MB of Ram - expandable to 6 MB



- PostScript/HP LaserJet Series II Emulation

Features

- 8 pages per minute
- 20MHz processing speed
- PostScript / HP LaserJet Series II Emulation
- Parallel, serial & AppleTalk interfacing



- 2MB standard, 3MB option

Printers Plus Price: **CALL** List Price \$2,795

Printers Plus Price: **CALL** List Price \$4,995

GSA No. GS-00K-90-AGS-5203.

PRINTERS PLUS

Hours: Mon-Fri:
9am - 7pm EST
Printers Plus, Inc.
14524-1 Lee Road
Chantilly, VA 22021
(703) 734-0236

1-800-877-4683

Authorized Dealer



HEWLETT
PACKARD



MC / VISA Accepted
APO/FPO Shipping Available

*Call for details.

Same Day & 24 Hour Shipping On In-Stock Orders! 15% restocking fee applies to all returned or refused merchandise.

Circle 224 on reader service card

A HARD DRIVE IS A TERRIBLE THING TO WASTE.

For only **\$6 per hour**, you can download onto your hard disk from DELPHI's library of over **10,000 programs**. Join now for **\$9.95** and your first hour is **free**. There is no surcharge for downloading at 2400 baud and no premium for dialing locally via Tymnet. If you have a really large disk, choose the 20/20 Advantage Plan and enjoy **20 hours for \$20**.

To join, with your computer and modem:

- Dial 1-800-365-4636
- At Username: type JOINDELPHI
- At Password: type PCWORLD

DELPHI

POPULATING HARD DRIVES SINCE 1982

800-544-4005 • 617-491-3393

Circle 67 on reader service card

Memory Upgrades

-and so much more!

5 Year Warranty! Lowest Prices! Best Brands! New!

TOSHIBA T1000SE 2MB \$449
T1600, T3100E, T3200SX, T5100 2MB \$279
T3100SX 2MB \$299
T3200 3MB \$469
T5200 and 8500 2MB \$279

BocaRAM memory expansion boards

BocaRAM XT with 1MB \$179 2MB \$254
BocaRAM AT Plus with 80ns chips 2MB \$289
4MB \$449 8MB \$779

COMPAQ fully compatible memory

386/20, 25, 20e, 25e, 386s modules
1MB \$145 4MB \$369
386/20e, 25e, 386s expansion boards
1MB \$189 4MB \$492
386/33, 486/25, System Pro mod. 2MB \$255
386/16 boards 1MB \$378 4MB \$1135
386/16 expansion kit for board 1MB \$159
SLT/286 512K \$82 1MB \$245
Portable III 2MB \$219
LTE 1MB \$179 2MB \$299

ZENITH fully compatible memory

386/20, 25, 33 1MB \$149 2MB \$249
Supersport 286 1MB \$279

H-P LASERJET

Memory boards: 1MB \$129 1MB \$135
all expandable 2MB \$185 2MB \$189
up to 4MBytes. 4MB \$319 4MB \$329
25-in-1 Font Cartridge: II/III/III-249, III-339

IBM PS/2 easy memory expansions

30/286 kit 512K \$66 2MB \$195
70-E61, 70-121 1MB \$105 2MB \$199
70-A21 32-bit module 2MB \$220
80-041 32-bit board 1MB \$149
80-111, 80-311 32-bit board 2MB \$249
8MB board with 2MB installed: for 70/80: \$554
for 30/286, 50, 50Z, 55, 55SX, 60: \$489
upgrade kits for above boards 2MB \$199
IBM Laser Printer memory upgrades Please Call

SIMM plug-in memory modules

Easy and inexpensive. Please check your manual.
256KB x 9 60ns \$49 70ns \$33
80ns \$26 100ns \$24
1 MB x 9 60ns \$115 70ns \$85
80ns \$75 100ns \$70

Math Coprocessors- All Genuine INTEL

Lowest prices on the best products. Call for the right coprocessor to supercharge your computer.

Customer satisfaction since 1982. Thousands of products—
Call today for **FREE CATALOG** or pricing on other products!

TENEX
Computer Express



56800 Magnetic Drive
Mishawaka, IN 46545
FAX: 219-255-1778

Shipping & handling \$5.00
P.O.s & dealers welcome.
Prices subject to change

Toll Free Nationwide **1-800-776-6781**
International 219-259-7040

WIB

Circle 315 on reader service card

PC WORLD

TAKING CARE OF BUSINESS THE PC WORLD SUBSCRIBER HOTLINE

Do you have a subscription problem that needs attention? Are you moving?

Have an address change? Do you need to check your expiration date?

For the fastest service simply call our toll-free subscriber hotline: 1-800-234-3498 between the hours of 6:00 AM and 8:00 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PC WORLD

HOURS:

7 AM to 7 PM Monday-Friday
8 AM to 2 PM Saturday
Call on Sunday



P.O. BOX 3185 • OAK BROOK, IL 60522-3185

Visa, MasterCard, Discover
and American Express
Accepted.



Ad No. 9091

International Orders A Specialty

Phone 1-708-654-4100

Letter of Credit accepted

COMPAQ
Laptop LTE 286
20 Mb/40 Mb
\$2925/\$3395

HP
LaserJet IIP
(with toner) \$990
HP LaserJet III
(with toner)
\$1599

286 CLONE
12 Mhz, 1MB RAM,
1.2MB Floppy, 40MB HD,
Mono Monitor
2 Yr. Warr.
\$1198

**1% Consultant
and Reseller
Accrual Program**
(\$64,240 paid in 1989)

IBM PS/2

Model 25—Mono/Color	\$995/1250
Model 30—286 20 Mb Disk	\$1725
Model 30-286 30 Mb Disk	\$1925
Model 55SX—601Mb Disk	\$3155
Model 65SX—30 Mb Disk	\$Call
Model 70-E61/061/A61	\$3550, 3999, 5900
Portable 70—60/120 Mb Disk	\$5300/5795
Model 70—120 Mb Disk 20 Mhz	\$4499
Model 70-A21—120 Mb Disk 25 Mhz	\$6300
Model 80—70 Mb Disk	\$4800
Model 80—115 Mb Disk	\$5900

*We Supply 100% IBM Internals...
Not Everyone Does!*

COMPAQ

286e Deskpro 1/20/40	\$1910/2210/2389
386/20e Deskpro 40/110 Mb	\$4295/4875
386S Deskpro 20 Mb/40 Mb	\$Call/2850
386/33 84/320 Mb	\$7295/10599
386/25 110 Mb/300 Mb	\$6200/8150
Portable III Model 20	\$3400
Portable III Model 40	\$4050
Portable 386 Model 40	\$5200
Portable 386 Model 110	\$6800
Laptop SLT 286 20/40	\$3675/4175
Laptop LTE 20 Mb	\$2144
Laptop LTE 286 20/40	\$2925/3395

*We Supply 100% COMPAQ Internals...
Not Everyone Does!*

TOSHIBA LAPTOPS

T1000SE/XE	\$1179/1895
T1200FB/HB	\$1485/1879
T1200XE	\$2699
T1600 20/40 Mb Disk	\$3200/3600
T3100 SX	\$3971
T3200 SX	\$4000
T5200 40 Mb/100 Mb	\$4889/5250

DISK DRIVES

SEAGATE 20 Mb Kit	\$259
SEAGATE 30 Mb Kit	\$279
SEAGATE 40 Mb ST 251-1	\$360
SEAGATE 80 Mb	\$569
TOSHIBA 1.44 Mb Floppy	\$110
PROCOM Ext 5.25" for PS/2	\$279
PROCOM 45 Mb for PS/2	\$695
COMPAQ 1.44 1/3 HT	\$199

Card Drives

PLUS II 40/80	\$599/699
PLUS 20 Mb/40 Mb Hard Card	\$519/599
PROCOM 20 Mb	\$379
PROCOM 30 Mb/40 Mb	\$429/519
MAYNARD 20 Mb	\$Call

FAX

MURATA M1600	\$899
SHARP F0220/F0330	\$950/1159
SHARP F0510	\$1150
TOSHIBA 3010	\$1275
TOSHIBA T30100	\$1049
TOSHIBA T3300	\$1199
TOSHIBA T3700	\$1500

AST

286 10Mhz w/40 Mb	\$1799
286SX/16 w/40 Mb	\$2299
386 20Mhz w/40 Mb	\$3299

CALL FOR OTHER CONFIGURATIONS
ASK ABOUT AVAILABLE SERVICE PLAN

TAPE BACK UP

IBM 6157 for PS/2	\$1350
IRWIN — All Models	\$Call
MAYNARD 60 Mb XT/AT Int/Ext	\$675/881
MAYNARD 60 Mb for PS/2	\$899
MOUNTAIN 60 Mb	\$1199

MONOCHROME MONITORS

AMDEK 432	\$160
COMPAQ Mono Amber/Green	\$210
COMPAQ VGA Mono	\$210
IBM PS/2 8503	\$209
MULTISYNC GS IIA	\$239
PACKARD BELL Amber/Green	\$85

COLOR/EGA MONITORS

IBM PS/2 8512	\$450
PGS UltraSync	\$500
SAMSUNG RGB/EGA	\$245/378
Smartscan 735	\$520

VGA/CAD MONITORS

COMPAQ AGCM Monitor	\$1399
COMPAQ VGA Color	\$520
GOLDSTAR VGA	\$380
IBM 8515	\$695
IBM PS/2 8513	\$549
IBM PS/2 8514	\$1150
MITSUBISHI 6905	\$2310
NEC MultiSync 40/50	\$1140/2399
NEC MultiSync 2A/3D	\$495/639
ZENITH 1492	\$649

NETWORK PRODUCTS

HYUNDAI Diskless Workstation	\$595
SAMSUNG 286 Diskless Workstation	\$1150
HANDOK Diskless Workstation	\$1600
386SX, 2Mb RAM, VGA, w/o NIC	\$1600
CALL FOR SOFTWARE PRICES!	

ARCNET PS110	\$410
ARCNET PC130	\$160
ARCNET PC260	\$235
8-bit Ethernet Card	\$189
16-bit Ethernet Card	\$295
32-bit Ethernet Card — AT	\$929
32-bit Ethernet Card — MCA	\$775
ARCNET Passive Hub	\$90
ARCNET Active Hub	\$469
Ethernet Terminators	\$38

*Trained & authorized network support
\$85/hour.*

TERMINALS

WYSE 50 Amber or Green	\$390
WYSE 60 Amber or Green	\$309
WYSE 85	\$394
WYSE 150	\$290

SOFTWARE

Aldus Pagemaker	\$490
COMPAQ DOS 3.31/4.0	\$89/110
dBase IV	\$480
DisplayWrite IV	\$299
Harvard Graphics 2.3	\$299
IBM DOS 3.3/4.01	\$99/119
IBM OS/2 Standard 1.2	\$269
IBM OS/2 Extended 1.2	\$659

Lotus 1-2-3 V 2.2/3.0	\$335/409
Lotus Symphony	\$450
MicroSoft Windows 3.0	\$95
MicroSoft Excell	\$309
MicroSoft Word/Work	\$220/110
Multimate V 4.0	\$279
Norton Advanced Utilities 4.5	\$85
Paradox 3.0	\$439
PFS First Pub	\$92
PFS 1st Choice	\$105
PFS Prowrite/File	\$135/199
Q&A	\$230
Quicken	\$37
Rightwriter	\$59
Smartcom II/III	\$90/150
Ventura Publisher	\$533
Word Perfect 5.1	\$251

LASER PRINTERS

HP DeskJet Plus/IIP	\$675/990
HP LaserJet IID with toner	\$2495
HP LaserJet III	\$1599
IBM LaserPrinter/E	\$1779/1099
NEC SilentWriter 260	\$2695
Pacific Data 25-in-1 Font	\$282
Pacific Data 1-2-4	\$195
Pacific Page Postscript Cart	\$495
PANASONIC KXP4420	\$Call
PANASONIC KXP4450	\$1399
TOSHIBA PageLaser 12-B	\$2499

PLOTTERS/SCANNERS, ETC.

CalComp	\$Call
HP Plotter 7440A/7475A	\$965/1399
HP Plotter 7550	\$2920
HP ScanJet Plus with IF	\$1499
Sumasketch 12x12/12x18	\$375/630

PRINTERS

Diconix	
150 Plus	\$344
Epson	
FX 850 260/84 cps	\$347
FX 1050 260/84 cps	\$449
LQ 510 60/180 cps	\$335
LQ 850 264/88 cps	\$507
LQ 1050 264/88 cps	\$719
LQ2550 400/133 cps	\$949
LX 810 30/180 cps	\$195
DFX 5000 533/80 cps	\$1399
IBM	
Quickwriter	\$1120
Quietwriter III	\$1125
Proprinter X24e	\$615

Proprinter XL 24e	\$797
Proprinter III/III XL	\$400/645

NEC

P2200XE	\$349
P5200	\$544
P5300	\$695
P6200	\$Call

Okidata

ML 172P	\$210
ML182 Turbo	\$230
320/21	\$365/477
390+/391+	\$483/648
393+/393+ Color	\$1049/1118

Panasonic

KX 1180 I 192/38 cps	\$179
KX 1191 I 240/48 cps	\$239
KX 1124 192/48 cps	\$319
KX 1624	\$444
KX 1695 NEW!	\$444
KX 1524 240/80 cps	\$540

COMM./EMULATION

AST PC XT/AT 5250 Emulation	\$575
EVEREX 1200 w/SW	\$75
EVEREX 2400 Int/Ext	\$137/195
HAYES 1200B Int/SCII	\$243/282
HAYES 1200 Ext	\$277
HAYES 2400 Int/Ext	\$269/349
IBM PS/2 50-80 5250 Emulation	\$675
IBM PC XT/AT 5250 Emulation	\$675
IBM PC XT/AT 3270 Emulation	\$450
MEGAHERTZ 2400B	\$169
US ROBOTICS 2400 Int	\$159
World Port FAX/Modem	\$499

MULTIFUNCTION CARDS

AST 6 Pack w/384K	\$189
AST 6 Pack/286 w/512K	\$299
COMPAQ 1Mb	\$525
COMPAQ 4Mb	\$1900
IBM i486 Add on	\$3000
Intel Above Board Plus 286/512K	\$395
Intel Above Board II Plus OK	\$295
Intel Above Board MC32 OK	\$399
Sota 286i/386si Accel	\$279/\$495

VIDEO BOARDS

ATI VGA Wonder 256K/512K	\$279/329
COMPAQ AG 1024 Board	\$1049
COMPAQ AG Memory Board	\$425
COMPAQ VDU	\$145
COMPAQ VGA	\$419
GENOA 6400	\$259
PARADISE Auto Switch-480	\$195
PARADISE VGA/VGA+16	\$195/285
RP MonoGraphics	\$69

CHIPS

Intel	
8087-1/2/3	\$220/149/88
80287-6/8/10/A	\$167/200/220/355
80387-33/20/25/SX	\$574/400/472/313

ACCESSORIES

AB Switchbox	\$40
CAP15 Power Director	\$100
Kensington Masterpiece Plus	\$110
Keytronics KB101	\$100
Printer Cable 6'10"/20'	\$20/25/60
6 Outlet Surge Protector	\$25
101 Key Tactile Keyboard	\$75

MICE

Kensington Expert Mouse PS/2	\$129
LOGITECH BUS	\$85
LOGITECH C9 HiRes/PS/2	\$85
LOGITECH Trackman Ser/Bus	\$95/105
Microsoft Mouse with Paint	\$119
Microsoft Mouse with Windows 3.0	\$159
IBM Mouse	\$85



Member
INTERNATIONAL
ORGANIZATION OF
COMPUTER MARKETERS

"Call Us With Your Best Price"... Dick

1-800-634-8215

In Illinois Call...

1-708-654-4100

SALES AND QUOTES (Outside Illinois): 1-800-634-8215

SHIPPING AND TECHNICAL SERVICE: 1-708-654-4170

QUOTE-A-FAX: 1-708-325-4969

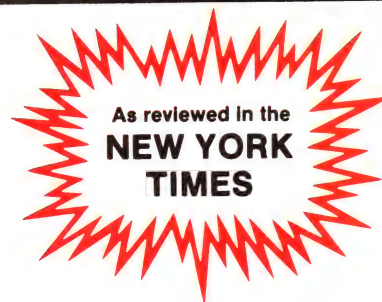
- All manufacturer's warranties are good through RP Systems™
- Corporate accounts call Dan.
- Lease available.
- Over 4000 products available with \$6,000,000.00 inventory in stock.
- IBM AS/400 processes your order within minutes of receipt.
- 24 hour burn in on all CPUs.
- Credit cards charged upon shipment only.
- Expanded customer service hours! Now 7:30 AM to 6:30 PM (8:00 AM to 2 PM Sat.) Central Time
- Prices subject to availability and change without notice.
- Prices reflect 3% cash discount.
- Wire transfer accepted.
- Fraud aggressively prosecuted.
- Restocking charge on returns.
- Educational P.O.'s welcome.
- Corporate terms available.
- Prepay and deduct 1%. Must be done when placing order; applies to advertised prices only.

Circle 125 on reader service card

FREE SOFTWARE

CALL TOLL FREE:

1-800-777-1055



AND RECEIVE **7** GREAT PROGRAMS

1 HOUSEHOLD REGISTER. Maintain a detailed list of your possessions. HR provides the total value of your belongings which will assist in determining insurance coverage.

2 AS-EASY-AS. Incredible spreadsheet program! Compatible with Lotus 1-2-3 (C). Excellent user interface. Produces beautiful charts and graphs easily.

3 PRINT CONTROL PROGRAM. Define any area of your screen or text to be printed.

Star West Software is a good source of inexpensive, well-tested programs."

— New York Times
August 29, 1989

4 SCREENSAVER. Memory-resident screen blanking utility requires less than 2K of memory. Functional with most types of video displays. Allows you to blank the screen with the touch of a key.

5 TREETOP. Powerful hard drive file and directory management tool. Allows you to move, copy, print, and change attributes of tagged or individual files, plus other features.

6 DOUBLE BLOCKS. Based on the famous game, Tetris (C). Includes one or two player modes, up to 20 levels of difficulty.

7 POWERCHESS. Beautiful graphics and play options make this one of the best chess games around.

FREE INTRODUCTORY OFFER

We'll send you these 7 great programs absolutely FREE when you sign up for the Star West Monthly Software Club.

WHAT'S THE CATCH?

There is no catch. After receiving these free programs for your review, if you decide that our club is not for you, simply call our toll free line and cancel your membership. The software is yours to keep — free of charge.

If you like our club, then you don't have to do anything. Each month you will receive the next issue of our club at the incredibly low

price of only \$6.95. And if at any time you wish to cancel your membership, simply call our 800 number — no questions asked.

WHY ARE WE GIVING AWAY OUR PROGRAMS?

Because we know that once you try our software, you'll realize it's simply a bargain you can't pass up!

SIGN ME UP!

Send my first selection of the Star West Software Club — FREE — and send me the latest in PC software each month for the unbelievable price of \$6.95.

Name _____

Address _____

City _____ State _____ Zip _____

Phone () _____

☐ VISA ☐ MASTERCARD Complete Visa/MC info required to process order

Card # _____ Exp. Date _____

Signature _____

MAIL TO: Star West Software

1945 Camino Vida Roble, Ste. A, Carlsbad, CA 92008 • (619) 931-4940

2

Year On-Site Warranty Unconditional Coverage On All Parts and Labor

386-SX ONLY \$795

386-25 ONLY \$1399

286-12 ONLY \$595

Now, with every system, Octagon gives you **TWO YEARS** of next day deside service at your home or office - **FREE**.

Backed by more than a thousand technicians nationwide, your entire computer and everything in your system is covered - from hard-disks to monitors, from modems to mice.

How do we do it? By using only top-rated components and extremely thorough quality control and testing methods.

Every Octagon computer is subjected to 80 separate checks, burned in for 48 hours, then tested again. And each system ships with this 80 point checklist, signed by the technician who performed it.

After all, with a two-year commitment to every last part of your computer, we have a real investment in making things right.



Every System Includes:

One Megabyte Memory, Expandable up to 16
1.2 or 1.44 High Density Disk Drive
101 Tactile-Click Keyboard, MGP Video Card
1 Parallel, 2 Serial, Game Ports, Clock/Cal
Deluxe Case with 200 Watt Power, 6 Drive Bays

VGA 1024 x 768 Only \$499 Additional
40 Meg 28ms Hard Disk Add \$320
80 Meg SCSI only \$450 upgrade

Octagon

800-726-1775

OCTAGON TECHNOLOGIES, INC.
18 EAST SIXTEENTH STREET
NEW YORK, N.Y. 10003

Not responsible for typographical or printing errors. Prices and specifications subject to change without notice.
All brand names, including IBM are the registered trademarks of their corporate owners.

Fax: 212-255-4095

KENOSHA

EPSON PRINTERS

LX 810 — 200 cps, 30 nlq	\$173
FX 850 — 264 cps, 54 nlq	\$299
FX 1050 — 264 cps, 54 nlq	\$399
LQ 510 — 225 cps, 75 nlq	\$275
LQ 850 — 330 cps, 88 nlq	\$459
LQ 950 — 330 cps, 88 nlq	\$469
LQ 1010 — 225 cps, 75 nlq	\$409
LQ 1050 — 330 cps, 88 nlq	\$599
LQ 2550 — 400 cps, 108 nlq	\$859
EPL6000 — Laser Printer	\$799

CALL FOR OPTIONS AND RIBBONS

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN

1-800-255-2989



Shipping, customer service &
technical assistance call
414-697-9595

Fax 414-697-0620

AST COMPUTERS

Bravo 286 — 20MB & monochrome monitor	\$1295
286 Premium — 40 MB hard drive & monochrome monitor	\$1699
386 5V — 386 SX, 40 MB, monochrome card & monitor	\$2199
386C — 20Mhz, 40 MB, monochrome monitor	\$3199
386 — 25Mhz, 40 MB, monochrome monitor	\$4099
386 — 33Mhz, 40 MB, monochrome monitor	\$4699

COMPAQ

286E w/40MB	\$2299
286E w/100MB	\$2699
386S w/40MB	\$2495
386S w/110MB	\$2895
386E w/40MB	\$3995
386E w/110MB	\$4249
386 25MHz w/110MB	\$6295
Portable III, 20MB	\$3549
Portable III, 40MB	\$4199
SLT Laptop 20MB	\$3749
SLT Laptop 40MB	\$4199
Compaq LTE	CALL
Compaq LTE 286	CALL

FOR ALL YOUR LASER PRINTER NEEDS

HEWLETT-PACKARD

LaserJet II w/toner	CALL	LaserJet III w/toner	\$1579
LaserJet IIP w/toner	\$959	LaserJet IID w/toner	\$2479

PACIFIC

DATA PRODUCTS

25-in-1 Font	\$249	1 MB Upgrade	\$149
172 fonts & symbol sets		2 MB Upgrade	\$199
Pacific Page	\$349	4 MB Upgrade	\$399
PostScript® language emulation in a cartridge		Outlines 1 & 2	\$199
Headline Cartridge	\$199	Scaleable font for Laser III	
Large fonts for all applications		Memory for Epson, Toshiba, AT&T, Packard Bell, Mansman Tally, NCR	Call for Price
Plotter in a Cartridge	\$229	Mac Page	\$389
Plotter emulation for the LaserJet Series II™		Pacific Page for the Mac	

EVEREX— TAPE DRIVES

Excel 40AT Int.	\$259
Excel 40T Int./Ext.	\$529/\$599
Excel 60T Int./Ext.	\$589/\$679

MODEMS

Everex 2400 Int.	\$119
w/MNP-5	\$159
Everex 2400 Ext.	\$169
w/MNP-5	\$199
Everex 2400 PSII Int.	\$179

VIDEO & MEMORY BOARDS

Viewpoint VGA 16-bit w/256K	\$179
w/512K	\$229
Micro Enhancer EGA	\$99
Ram 8000/10000	\$249/\$159
Everex Hard Fonts	CALL
Fax Modem 9600	\$279



LAPTOP MODEMS

All models 2400 Baud

Toshiba T1000	\$159
Toshiba 1200 & 1600	\$159
Toshiba—All Other Models	\$149
Toshiba 2400w/MNPS	\$299
Zenith Supersport	\$159
Compaq SLT	\$169
Compaq LTE	\$169
NEC ProSpeed	\$169
Sharp, Epson, Apple & all others	CALL
Ethernet & Token Ring	CALL

LAPTOPS

TOSHIBA

T1000SE	\$1149
1600/3100E	\$2599/\$2799
3100SX/3200SX	\$3899/\$3999
5200 40/100	\$4899/\$5299
All Other Models	CALL

ZENITH

Supersport 286E-20	\$2999
Supersport 286E-40	\$3199
386SX-40	\$3449
386SX-100	\$3949
All Other Models	CALL

LAPTOP MEMORY

1 MB Compaq LTE 286	CALL
2 MB Compaq LTE 286	CALL
1 MB Compaq SLT 286	CALL
2 MB Toshiba T1600	CALL
2 MB Toshiba T3200SX	CALL
2 MB Toshiba 5100	CALL
2 MB Toshiba 5200	CALL
All other models	CALL

PRINTERS

OKIDATA

ML320	\$339	ML391	\$629
ML321	\$459	ML393	\$969
ML390	\$459	CALL FOR OPTIONS	

PANASONIC

1124	\$279	1624	\$379
1180	\$169	1695	\$399
1191	\$229	4420	\$899

4450i Laser...\$1199
CALL FOR OPTIONS

HARD DISKS

SEAGATE

20MB w/contr. ST225	\$249
30MB w/contr. ST238	\$259
40MB for AT ST251-1	\$299
48MB 157N Kit	\$339
80MB for AT ST296N	\$429
71MB IDE	\$549
138MB ESDI-SG1156E	\$899
211 IDE-SG1239A	\$1159

PLUS HARD CARDS

20MB/40MB	\$489/\$549
80MB	\$659

CONNER

40MB/100MB	\$389/\$699
------------	-------------

TAPE BACK UP

Everex — See box at right	
Maynard 60MB External	\$829
Mountain 40MB Internal	\$359
Mountain 40MB External	\$559

MONITORS

Compaq VGA	\$539
Mitsubishi EGA	\$339
Mitsubishi Diamondscan	\$489
Mitsubishi Multiscan 20L	\$1999
NEC Multisync IIA	\$469
NEC Multisync IIID	\$599
NEC Multisync IVD	\$1150
NEC Multisync VD	\$2299
Princeton Ultrasync	\$499
Princeton Ultra 16	\$879
All Goldstar Monitors	CALL

Prices and
availability
subject to
change

GRAPHICS CARDS

ATI Edge VGA	\$179
ATI Wonder VGA	\$219
Everex Enhancer EGA	\$89
Everex Viewpoint VGA	\$179
Hercules Graphics Plus	\$179
Orchid Pro VGA w/512K	\$289
Paradise Autoswitch 480	\$95
Paradise VGA 1024	\$219
Paradise VGA Plus	\$159
Paradise VGA Plus 16	\$199
Vega VGA	\$199
Vega VRAM VGA w/512K	\$419

SOFTWARE

Word Perfect 5.1	\$249
D Base IV	\$459
IBM Displaywrite IV	\$229
Lotus 123 Version 2.2	\$329
Microsoft Word	\$219
Multimate Adv. II	\$279
R Base for DOS	\$439
Symphony	\$429
Ventura Desktop Publ.	\$509
Wordstar 2000 Plus 3.0	\$269
Wordstar Pro 5.0	\$239

LOGITECH

Trackman Stationery Mouse	\$89
Scanman 400 DPI Scanner	\$169
High Resolution C9 Mouse	\$69
Finesse Desktop Pub. Software	\$95

DIGITIZERS

Summasketch 12x12	\$349
Summasketch 12x18	\$589

FAX MACHINES

Sharp FO-215	\$629
Sharp FO-230	\$649
Sharp FO-333	\$799
Sharp FO-510	\$999

intel CHIPS



8087-3/8087-2	\$99/\$119
80287-6MHz	\$149
80287-8MHz	\$189
80287-10MHz	\$209
80387-16MHz/SX	\$319/\$299
80387-20MHz	\$359
80387-25MHz	\$439
80387-33MHz	\$549
20C287-A	\$269

MEMORY & MULTIFUNCTION BOARDS

COMPAQ UPGRADES

386 1MB/4MB	\$199/\$399
Portable 386 1MB	\$399
SLT 1MB	\$399
386-33 2MB	\$499

IBM UPGRADES

30-286 512K	\$119
PSII 50 & 60 2MB	\$399
Model 70 & 80 2MB	\$399
All others	CALL

CHIPS & MULTIFUNCTION

64K or 256K Ram Chips	LOW
256K Simms/1MB	\$30/\$89
1MB DRAM	CALL
AST 6 Pack Plus w/384K	\$179
AST 5251-11 Plus Enhanced	\$499
Intel Above Board 286 Plus	\$339
Intel Plus 8 w/2MB	\$539
Irma Board	\$409

MODEMS

Everex	See box above
Hayes 1200B w/software	\$199
Hayes 2400 ext	\$339
Hayes 2400B w/software	\$279
US Robotics 2400 int/ext	\$149/\$169
US Robotics 1200 int/ext	\$84/\$98
US Robotics Cour. 2400	\$279
US Robotics HST 9600	\$579

No charge for MasterCard or Visa; American Express add 5%. We will ship COD on a cash or cashier's check basis only. Shipping & handling 3% — \$6 minimum; AK and HI slightly higher. 15% restocking charge on returned items. Purchase orders accepted from Fortune 1000. Government institutions, schools and universities. 2% shipping discount available on orders over \$2000 if prepaid by check.

COMPUTER CENTER

Circle 41 on reader service card

KENOSHA
COMPUTER CENTER
2133 91st St.
Kenosha, WI 53140

A Decade of Experience Delivers

PRICE

A DECADE OF THE LOWEST PRICES

SHIPPING

MOST ORDERS SHIPPED IN 24 HOURS

CONVENIENCE

EXTENDED HOURS LATE NIGHTS, SATURDAYS AND SUNDAYS

CONFIDENCE

WE DO NOT CHARGE YOUR CREDIT CARD UNTIL YOUR ORDER IS SHIPPED

COMPUTERS	BOARDS	HARD CARDS	PRINTERS	OCR/SCANNERS
ALR Power Flex 286/40MG \$1149 AST All Models Call Texas Instruments Laptop Model 12 1989 Model 25 2300 Toshiba T-1000 SE 1159 T-1000 XE 1789 Epson Equity Laptop 286E-12 2140 Equity Laptop 386SX-16 2895 Other Models Call MIT PRODUCTS 286/12 1FDD 40MB DOS \$1021 386SX/16 1FDD 40MB DOS 1271 386 25NC 40MB DOS 1743 All Models Call Modem 1200B 58 Modem 2400B 100 Keyboard 50 150MB Hard Drive 896 Mono 12" Monitor 85 Mono 14" Monitor 109 EGA Monitor 229 VGA Monitor 345 TERMINALS Wysa 30 Amber \$292 60 Amber 370 60 Amber, No Key Board 289 85 Green 355 150 275 SOUND BOARDS Creative Labs Sound Blaster \$149 Ad Lib Music Synthesizer Card 109	AST RAMPAGE + 286 w/512K \$385 Six Pack 384K 219 Other Models Call ATI EGA Wonder Enhanced 800 + ... 105 VGA Wonder 256K w/Mouse 219 VGA Wonder 512K w/Mouse 275 Everex RAM 3000 Deluxe 79 RAM 8000 175 Hercules Color Card 100 Graphics Card Plus 175 Other Models Call Intel Above Board + 512K Plus 315 Above Board + w/2MG P/S 549 Above Board + w/2MG 525 expands to 8 MG 579 Inboard 386 PC (1MG) 579 Other Models Call Orchid Pro Designer II 295 Tiny Turbo 286 205 Tiny Turbo Xtra 265 Other Models Call Paradise VGA + 256K 119 VGA + 16 149 VGA Professional 229 VGA 1024 512K 235 Plus Hard Card 20 MG 485 Hard Card 40 MG 549 Hard Card II 40 MG 379 Hard Card II 80 MG 649 Video 7 Fastwrite VGA 145 1024 I w/256K 209 Other Models Call	Plus Development 20 Meg \$485 40 Meg II 379 80 MG II 649 Other Models Call DISK DRIVES Iomega (Bernoulli) 40 Meg (Dual 20 MG) \$1739 Beta 88 MG Dual 44 1989 Beta EXT 20 MG 1005 Beta 44 MG Master 975 Other Models Call Colorado Memory Systems (With Tape) Jumbo 40/80 INT 309 Jumbo 40/80 EXT 415 Irwin Tape Back-up 20 MG INT 265 40 MG INT 355 80 MG INT 445 Sagate 20 MG w/Controller 249 20 MG EXT Drive, For PS2 235 Hewlett Packard Laser Jet IIP 1069 Laser Jet IIP 1089 Other Models Call IBM Pro Printer II XL 335 Pro Printer II 269 NEC LC260 1719 LC290 2550 P2200XE 315 P6200 Call Okidata 182 Turbo 230 320 335 321 469 390 Plus 469 391 Plus 635 393 Plus 1009 Other Models Call Panasonic 1124 295 1180 165 1191 245 1624 365 1695 430 4420 Laser 999 Other Models Call Seiko Smart Label Printer 165 Star Micronics NX 1000 Rainbow 199 NX 100 Var. 2 165 NX1500 305 Other Models Call Texas Instruments Micro Laser Postscript 35 Font 1845 Micro Laser 1119 Toshiba Page Laser 6 955 Other Models Call	ALPS Allegro \$315 Other Models Call Cannon LBP-4 Laser 915 LBP-8 Laser 219 Citizen Printer 120D 139 180D 155 GSX 140 Color 299 HSP 500 315 Other Models Call Diconix 150 Plus 339 Epson EPL 6000 Laser 849 FX 850 315 FX 1050 439 LQ510 299 LQ850 469 LQ1050 639 LQ2550 935 LX810 185 Other Models Call Hewlett Packard Laser Jet IIP 1069 Laser Jet IIP 1089 Other Models Call IBM Pro Printer II XL 335 Pro Printer II 269 NEC LC260 1719 LC290 2550 P2200XE 315 P6200 Call Okidata 182 Turbo 230 320 335 321 469 390 Plus 469 391 Plus 635 393 Plus 1009 Other Models Call Panasonic 1124 295 1180 165 1191 245 1624 365 1695 430 4420 Laser 999 Other Models Call Seiko Smart Label Printer 165 Star Micronics NX 1000 Rainbow 199 NX 100 Var. 2 165 NX1500 305 Other Models Call Texas Instruments Micro Laser Postscript 35 Font 1845 Micro Laser 1119 Toshiba Page Laser 6 955 Other Models Call	HARDWARE Complete 400 Hand \$145 Full Page 525 Half Page 400 DPI 175 DPI Scanner HS-3000+ 159 Logitech Scanman + XT/AT 169 Scanman + PS2 209 Scanman + Catch WRD Bndl 275 SOFTWARE Cat Reader 1/2 Page \$140 Cat Reader Full Page 225 Complete Full Page OCR/FP 289 Complete Hand Scan 400 145 DFI OCR 65 DFI OCR Deluxe 145 MODEMS Anchor 1200B w/Software \$60 1200 EXT 90 2400B w/Software 85 2400 EXT 119 ATI 2400 ETC INT w/SW 155 2400 ETC EXT 179 Everex Evercom 1200 INT 49 Evercom 2400 INT 105 24" INT 139 24" EXT 189 Other Models Call Hayes 1200B 139 2400B 235 2400 EXT 319 9600V Series EXT 609 Other Models Call Intel 2400 Classic 139 2400 EXT 165 2400 PS/2 220 Practical Peripheral 1200B w/Software 125 2400 INT (w/MNP) 159 Other Models Call Prometheus 1200B w/Software 49 1200 EXT Pro Modem 205 1200B EXT 99 2400 EXT Pro Modem 295 2400G EXT 149 Pro Modem 9600 + EXT 650 U.S. Robotics Courier 2400 EXT 399 Courier 2400 (E/MNP) 319 Courier 9600 HST 575 ACCESSORIES Logical Connection 256K \$445 Logical Connection 512K 422 Logical Connection Plus 559 Masterpiece 82 Masterpiece Plus 93 Masterpiece Remote 99 Pacific Data 25 IN 1 I/II/D 258 Pacific Data 25 IN 1 III 324 Pacific Data 25-1 Cart (I/II/D) 269 Pacific Data 1-2-4 Plus 4 MB 353 Pacific Data 1-2-4 Plus 1 MB 164 Pacific Data 1-2-4 Plus 2 MB 209 Pacific Data 2 Plus 2 1 MB 139 Pacific Data 4 Plus 2 2 MB Call Summasketch 12x12 II 335 Summasketch 12x18 Pro II 582 4 Button 582 Summasketch 12x18 Pro II 599 16 Button 599

WordPerfect Office

WordPerfect Office 3.0 office automation software for the PC is a package of several programs designed to help you be more productive.

\$80.00

PC TOOLS

DATA RECOVERY
HARD-DISK BACKUP
DOS SHELL
DESKTOP MANAGER

\$87.00

DATA RECOVERY
HARD-DISK BACKUP
DOS SHELL
DESKTOP MANAGER

Central Point Software

MOST RELIABLE
10 Years of Mail Order Excellence

TAPE BACKUP

Colorado Memory System	
Jumbo 40/80 EXT w/Tape	\$415
Jumbo 40/80 INT w/Tape	309
Irwin	
20 MG Internal	265
40 MG Internal	355
80 MG Internal	445

1-800-537-4735

VARs/Dealers • Call 1-800-537-6753

NOW ACCEPTING INTERNATIONAL ORDERS • Call our FAX (602) 944-1510

• No Charge for VISA and MASTERCARD.
• We Do Not Charge Your Card Until Your Order is Shipped.
• You Pay The Ground Shipping 1-10 \$38.00, 11-20 \$72.00 (Except Alaska & Hawaii).
• We Pay The Air Difference.
• Free Air Applies ONLY to Domestic Orders Over \$100.

• All products including D.O.A.'s carry only manufacturer's warranties. We do not honor guarantees, rebates, trial period privileges or promotional programs offered by manufacturers.
• No returns on used or misordered product.
• We do not guarantee machine compatibility.
• Machine compatibility disclaimer does not apply to MIT Systems.

MEMBER

MMC
of the Direct Marketing Association, Inc.



"Serving the Direct Buyer"



Computer Shopper

Where smart buyers find smart buys.

BUYERS CHOICE



When you see the symbol, you're assured these products have been purchased most often by **telemart**'s national customer base.

All these products have been top ranked because you, the buyer, have selected them based on their performance and the **telemart** price.

You'll see the symbol in each category and know you can make the same smart choice.

MICE	
Kensington Expert Mouse PS/2	\$106
Logitech Serial Mouse	
New Hi-Res XT/AT	65
Logitech Bus Mouse	
New Shape Hi Res	74
Logitech Serial	
New Shape w/Print	89
High Res/FineBnd	109
MS Bus or Serial Mouse 1.0	97
MS Bus or Serial w/Windows 3.0	145
Microspeed PC Trac Bus	82
Microspeed PC Trac Ser	70
Microspeed PC Trac PS/2	70
Omni Mouse II Bus	55
Omni Mouse II Serial	36
PC Trac Ball Serial	46
PC Trac Ball Bus	64
Trackman Bus	81
Trackman Serial	75

MONITORS	
All Models	Call
Goldstar	
12" Amber	85
14" CGA	205
14" EGA	299
14" VGA	460
16" VGA	765
Mitsubishi	
20" 3905 ADK	1579
XC 1410 C EGA	329
XC 1420 C VGA	389
Diamond Scan 14"	489
Diamond Scan 16"	1019

NEC	
Multisync 2A	465
Multisync 3D 14"	659
Multisync 40	1149
Multisync 5D	2365
Multisync GS-2A	209
Princeton	
All Models	Call
Sony	
Multiscan 1304 14"	649
Multiscan 1302A	595
Zenith	
ZCM 1492	609

CO-PROCESSORS	
Intel	
80287-6	\$119
80287-8	185
80287-10	209
80387-16	319
80387-SX-16	285
80387-20	365
80387-25	459
80387-33	559
8087-1	150
8087-2	115

CD ROM	
NEC	
540 MB RDR	\$649
Panasonic	
Worm 950 MB	2225
Storage Dimensions	
All Models	Call

KEYBOARDS	
Keytronics	
KB5151	\$119
KB5153	149
KB101Plus	86

DISKETTES AND TAPES	
Sony	
3.5 D/S D/D Case Disks	\$85
3.5 H/D (Case Only)	159
5.25 D/S D/D Disks (100)	59
5.25 High Density (100)	100
Data Cart QD-2000 (10 pk)	139
Data Cart QD-300XL/P (10 pk)	179
Data Cart QD-600A (10 pk)	199
Data Cart QD-6150 (10 pk)	209

BEST SELECTION
We have the product you want.

SPREADSHEET	
Lotus 1-2-3 Ver. 2.2	\$329
Lotus 1-2-3 Ver. 3.0	399
Lotus Agenda	249
Lotus Magellan	99
Lucid 3-D	54
MS Excel for Windows	299
MS Multiplan	119
PC Outline	49
Plan Perfect	255
Quattro	84
Quattro Pro	310
See More Lotus 1-2-3	53
Supercalc 5	290
VP Planner 3D	133

INTEGRATED SOFTWARE	
Lotus Symphony 2.2	\$483
MS Works	92
PFS First Choice	94
SmartWare II w/Spell Chkr	429
PROJECT MANAGEMENT	
Harvard Project Mgr III	\$387
Org + Advanced	59
Superproject Expert	408
Timeline 4.0	439

LIST MANAGEMENT	
Label Pro	\$44
List & Mail	28
List & Mail Plus	36

telemart	
EXTENDED HOURS	
MONDAY-FRIDAY	
6:00 am-10:00 pm PST	
Sat. 8:00 am-5:00 pm PST	
Sun. 10:00 am-3:00 pm PST	

ACCOUNTING	
ACCPAC BPI	
AP, AR, GA, INV. Payroll	\$229
ACCPAC Bedford Accounting	147
ACCPAC Easy Gen. Acct.	53
ACCPAC BPI+	
Easy Filer	115
General Ledger	470
Inventory Contr.	470
Job Cost	470
Order Entry	470
DAC Easy Accounting 4.1	150
DAC Easy Bonus Payroll 4.1	88
DAC Easy Payroll 4.1	53
One Write + Acctg. System	159
One Write + Payroll	79
Plachtree III	142
Plachtree III w/Data Query	209
Profitwise Acct. 10-Pack	139
TimeSlips III	159
PERSONAL FINANCE	
Dollars & Sense w/Forecast	\$95
Money Matters	50
Quicken	34
Tobias Checkwrite Plus	27
Tobias Managing Your Money	112
Wealth Builder	132

GRAPHICS	
Deluxe Paint II Enhanced	\$77
Graph In The Box Executive	160
Harvard Graphics Draw Partner	45
Hot Shot Graphics	54
PC Paintbrush IV	150
PC Paintbrush IV Plus	105
Printmaster Plus	32
PRESENTATION GRAPHICS	
Animator w/Graphic	\$239
Transform	313
Corel Draw	455
Designer	232
Draftix Ultra	275
Harvard Graphics	275
Harvard Graphics Master Pack	275
Lotus Freelance Plus	315

COMMUNICATIONS	
Carbon Copy Plus	\$100
CompuServe Membership Kit	19
Crosstalk XVI	103
Crosstalk Mark4	127
Mirror III	48
Procom Plus	53
Prodigy Start-Up Kit	25
Remote 2 Complete Pkg	103
Smartcom II	78
Smartcom III	132

DATABASE MANAGEMENT	
Ask Sam	\$159
Clarion Professional Developer	449
Clipper	409
Data Perfect	256
Dbase III Plus	430
Dbase IV	485
Foxbase Plus 386	279
Foxbase Pro Single User	179
Paradox	215
Paradox Database Add-In	445
PFS Professional File	83
Q&A	215
Revelation Advanced	489
R&R Relationship Report Writer	88
Super Base 4 Windows	369
VP Expert	112

HOME OFFICE PUBLISHING	
Express Publisher	\$79
Finesse	89
Newsmaster II	43
Newsroom Pro	24
PFS First Publisher	83
Print Shop	35
Publish It!	105
Publishers Power Pack for 1st Publisher	43

PROFESSIONAL DESKTOP PUBLISHING	
Adobe Illustrator/Windows	\$279
Freedom of Press	259
Pagemaker 3.0	489
Ventura Publishing	599
Ventura Publishing Pro	345

FORM PROCESSING	
Form Base	\$295
Form Filler	78
Formtool Gold	49
Formworks w/Fill & File	79
Perform Filler	69
Perform 2.1	157
Perform Pro	263

WORD PROCESSING	
AMI Professional	\$289
Grammatik IV	47
Language Master	53
Lotus Manuscript	309
MS Word	200
MS Word Companion Disk	27
MS Word for Windows	305
Ultimate 4.0	245
PFS Professional Write 2.2	189
Right Writer	59
VolksWriter 4	99
VolksWriter Deluxe Plus	78
WordPerfect 5.1	245
WordPerfect Executive	129
WordPerfect Office	80
Wordstar 5.5	295
Wordstar 6.0	264
Wordstar 2000 + (Personal)	295
XY Write 3 Plus	199

FREE FASTEST DELIVERY

FEDERAL EXPRESS
You Pay The Ground Shipping
We Pay The Air Difference

Fox Software

FoxGraph™

An outstanding presentation graphics program for IBM and IBM compatible PCs. FoxGraph allows creation of custom 2D and 3D graphs for screen display & printing.

\$166.00

WORDTECH SYSTEMS™
Technology First

dbXL™

dbXL is an interactive database management system that is fully compatible with dBASE III Plus, and adds extended language features for better price/performance.

\$133.00

1-800-537-4735

CORPORATE ACCOUNTS • Call 1-800-752-0561

INTERNATIONAL ORDERS • Call (602) 944-0402/FAX (602) 944-1510

- Now accepting International Orders. Call our FAX at (602) 944-1510
- International Orders Add 5%.
- Call Before Submitting P.O.'s. Ask for National Accounts.
- Personal & company checks will delay shipping 3 weeks.
- Prices, terms, availability & specifications are subject to change without notice.
- Add 5% for C.O.D., A.P.O. & F.P.O. Orders.
- Mailing Address: 8804 N. 23rd Ave., Phoenix, AZ 85021.
- In Arizona Call (602) 944-0402.
- Order Line Hours: Mon-Fri 7am-6pm, Sat 8am-1pm, PC Order Processing: (602) 944-1037 10am-3pm Mon-Fri.
- Money Back Guarantee: Software ONLY. 30 Days from date of invoice. Refund ONLY on Product Price. Call for Return Authorization Number. Must be in original packaging.
- A.P.O.'s and F.P.O.'s add 5%.

PROGRAMMING & LANGUAGES

MS Basic	
Pro Development System	\$299
MS C Compiler	305
MS Cobol Compiler	555
MS Fortran Compiler	273
MS Macro Assembler	91
MS Pascal Compiler	182
MS Quick Pascal	61
MS Quick Basic	61
MS Quick C	62
Turbo Basic	65
Turbo C++	89
Turbo C++ Pro	139
Turbo Pascal 2nd Edition	159

OPERATING ENVIRONMENTS

Carousel	\$49
Desqview 386	116
MS Excel for Windows	299
Q DOS II	34
HDC Windows Express	48
Windows Ver. 3.0	90

MONEY BACK GUARANTEE

Software Only*

*See Details.

LAN & NETWORKING SOFTWARE

Above LAN	\$234
ACCPAC BPI Network	229
ACCPAC + Lanpak	234
Antisat	
Lantastic	Call
Data Ease LAN 3-Pak	439
DBase IV Lan	636
Foxbase Plus LAN	285
Harvard Graphics LAN	995
MS Excel Exec License Pack	245
MS Word License Pack	245
Novell	
Adv NW/286	1877
ELS I	470
ELS II	1074
Paradox Network 3.0	629
Q & A Network Pack	252
R-Base for DOS 1-3	466
R-Base for DOS Unlimited	1734
Supercalc 5 LAN Pack	295
Ventura Publishing Network	759
WordPerfect Additional User	155

DOS	
IBM OS/2 1.2 Extended	\$725
IBM OS/2 1.2 Standard	297
MS DOS 3.3	69
MS DOS 4.01	69
PC DOS 4.01	125

PC MAGAZINE EDITOR'S CHOICE

Where smart buyers find smart buys.

SAVE UP TO 70% EVERYDAY!

ON COMPUTERS, SOFTWARE & ACCESSORIES

CALL 1-800/BUY-WISE EXT. 35 ▼ For FAX ORDERING 708/382-7545

INTRODUCING 4 NEW VIP COMPUTERS WITH STATE OF THE ART IDE CONTROLLERS

- Complete AT® Compatibility
- Microprocessors with Phoenix BIOS
- 512K RAM - Expand. to 4 MEG*
- Parallel, Serial & Game Card
- Choice of 1.2 or 1.44 MEG Floppy Drive
- 101 Key AT® Style Keyboard
- 200 Watt Power Supply
- 386 20MHz - 1 MEG RAM



Monitor Optional

BASE PRICES

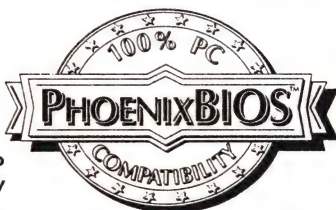
- 1) 286-12MHz Mfr. Sugg. Retail \$699.95..... **\$499⁹⁵**
- 2) 286-16MHz Mfr. Sugg. Retail \$799.95..... **\$599⁹⁵**
- 3) 386SX-16MHz Mfr. Sugg. Retail \$999.95..... **\$799⁹⁵**
- 4) 386-20MHz Mfr. Sugg. Retail \$1499.95..... **\$1199⁹⁵**

Systems Include:

▼ MS-DOS 3.3

▼ IDE Drives & Controller by Seagate

Increases your data transfer rate up to 100%. Exclusively on our VIP specially equipped personal computer systems.



SYSTEMS - JUST ADD TO BASE PRICE

▼ MONITORS HARD DRIVES	MONO	MONO VGA	RGB	EGA	VGA	SUPER VGA
HARD DRIVE NOT INCL.	\$190	349	340	430	540	709
20 MEG	\$430	589	580	670	780	949
48 MEG	\$500	659	650	740	850	1019
71 MEG	\$610	769	760	850	960	1129
111 MEG	\$900	1059	1050	1140	1250	1419

HIGHEST QUALITY ▼ LOWEST PRICE!

DS/DD 5.25"
FLOPPY DISKS



as low as

19¢ each

VGA MONITORS

- MAGNAVOX VGA COLOR .42mm dot pitch.... **\$279.95**
- AOC 14" ANALOG VGA .39mm dot pitch... **\$319.95**
- MAGNAVOX VGA COLOR .39mm dot pitch.... **\$329.95**
- AOC NON-GLARE VGA .31mm dot pitch..... **\$369.95**
- AOC 14" MULTISCAN .31mm dot pitch..... **\$399.95**

MODEMS

- 1200 BAUD INTERNAL by Incomm..... **\$39.95**
- 1200 BAUD EXTERNAL by Incomm..... **\$59.95**
- 2400 BAUD INTERNAL Modem Software Included.... **\$74.95**
- 2400 BAUD EXTERNAL 100% Hayes Compatible..... **\$93.95**
- 2400 BAUD SEND-FAX Transmit data & FAX..... **\$124.95**

SEAGATE HARD DRIVES

- 20MB ST225 HARD DRIVE KIT..... **\$218.95**
- 40MB ST251-1 HARD DRIVE..... **\$299.95**
- IDE HARD DRIVES BY SEAGATE..... **Call for Prices!**
 - ST125A...21.5MB ST138A...32.1MB ST157A...44.7MB
 - ST280A...71MB ST1126A...111MB
- SCSI HARD DRIVES BY SEAGATE..... **Call for Prices!**
 - ST157N...45MB ST296N...85MB

NEW! 180CPS PRINTER WITH NEAR LETTER QUALITY

- Rear Feed - Reduces Paper Drag!
 - Single Sheet Auto Load & Paper Parking
 - 8K Print Buffer
 - Pressure Sensitive Controls
 - LIFETIME WARRANTY on Printhead
- Mfr. Sugg. Retail \$299.95

\$149⁹⁵



COMPUTER DIRECT, INC.

22292 N. Pepper Road Barrington, Illinois 60010

"We Love Our Customers"

CALL FOR YOUR FREE CATALOG!

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd Day or Overnight delivery available. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands & APO-FPO. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions.

Circle 213 on reader service card

More Bytes for the Buck!

from CompuLynk!

Three Reasons Why You Get More for Less...

- ☒ Brand Name Computers
 ☒ Revolutionary Prices
 ☒ Two Year Warranty

The Powerful Tail 386-25

- 2 Megs RAM
- 1.2 or 1.44 Mb Floppy Drive
- 40 Meg Hard Drive
- 1:1 HD/FD Controller
- 16 Bit VGA Card
- 14" VGA Color Monitor
- 1 Parallel & 2 Serial Ports
- 101 Enhanced AT Keyboard
- MS DOS 3.3 or 4.01

ONLY \$2695.

FREE Software!
(\$100 Value)
Switch-It®
Time-Saving Software that lets PC Users Instantly Switch between up to 100 Programs & Files.

The Indus 386-SX

- 1 Megs RAM
- 1.2 or 1.44 Mb Floppy Drive
- 40 Meg Hard Drive
- 16 Bit VGA Card
- 14" VGA Color Monitor
- 1 Parallel & 2 Serial Ports
- 1:1 HD/FD
- EVEREX Motherboard
- 101 Enhanced AT Keyboard
- MS DOS 3.3 or 4.01

ONLY \$1895.

FREE MS Windows 3.0
with every 386-25 purchased

Compare Features-Then Call CompuLynk

Standard Features	386-SX Based Computers			386 Based Computers		
	CompuLynk	Dell	Zeos	CompuLynk	Dell	Northgate
Speed	16 Mhz	16 Mhz	16 Mhz	25 Mhz	25 Mhz	25Mhz
On Board Memory	1 MB	512K	512K	2MB	1MB	1MB
Total Memory on Board	8 MB	8 MB	8 MB	8 MB	4 MB	8MB
Floppy	1.2 or 1.44	1.2 or 1.44	1.2	1.2 or 1.44	1.2 or 1.44	1.2 or 1.44
16 Bit VGA & VGA Color	✓	X	X	✓	X	X
Standard Hard Disk	40 MB	20 MB	32 MB	40 MB	40 MB	200 MB
DOS	4.01	Optional	Optional	4.01	Optional	4.01 or 3.3
Price	\$1,895	\$1,899	\$1,395	\$2,695	\$4,199	\$3,434

System Upgrades

Additional 1 MB RAM.....	\$95
Additional 1.2 or 1.4 MB Drive.....	\$95
80 MB Hard Disk 28 msec.....	\$250
110 MB Hard Disk 26 msec.....	\$350
150 MB Hard Disk with ESDI Controller	\$895

On-site service by **TRW**

CompuLynk

"The Computer Solution Company"

180-B Turnpike Road • Westboro, MA 01581

Tel. 508 898-3731 • Fax 508 898-2548

"Call us for any of your software needs"

Order Now Toll Free!

1-800-969-9889

Hours: Mon.-Fri.

9 am-7 pm

Sat. 10 am- 3 pm

Eastern Standard

Time

C.O.D.

Orders

Accepted

Complete Networked
Systems Available



*FREE Switch-It is offered with a purchase of any Computer System ** Registered Trademarks are proprietary to their respective manufacturers.

Circle 26 on reader service card

Your #1 Source for Name Brands.

COMPUTER SYSTEMS

386/SX With 40 MB Hard Disk \$ **999***

386 SX Plasma Screen Portable \$ **1,299***

AST Bravo 286, Choice of HD.....\$699*
AST Prem. 386/SX, 40 MB + VGA.....1,999*
AST Prem. True 386, 65 MB HD.....2,999*
AST 486 ISA Tower File Server.....4,995*
ALR Powerflex 286, 40 MB HD.....1,199*
ALR Powerflex 386, 65 MB HD.....1,599*
ALR Powerflex 486, NEW!.....CALL
EVEREX Step/386, 65 MB HD.....1,995*
COMPAQ Portable III, 20 MB HD.....3,495*
PC/WORKS Port. 386, 65 MB.....1,895*

Swap, Mix or Match Choice of Hard Disks
Call for Special Pricing on:

NEC • NCR • ACER • TOSHIBA • MITSUBISHI • MORE!

MONITORS, TERMINALS & VIDEO CARDS

GOLDSTAR 14" EGA/VGA w/Card.....\$399*
NEC MultiSync 2A.....495*
NEC MultiSync 3D.....695*
NEC 4D 16" 1024x768, .28MM.....1,199*
SAMSUNG SC-431, 14" VGA Hi-Res.....395*
SAMSUNG MONO 12"/14" GRN/AMB Fr.....69*
WYSE Model 50/60 GRN/AMB Fr.....299*
WYSE Model 99GT/150 (OEM Ver.).....CALL
ATI VGA Wonder 1024x768.....199*
PARADISE Basic VGA & VGA Plus Fr.....119*
PC/WORKS Hi-Res. VGA 16 bit w/512k.....139*
VIDEO-7 Stock-Full Product Line.....CALL

Don't find what you're looking for?
Call our BBS catalog for a listing
of over 500 Name Brand items:

805/650-0193 (2400bd)
805/650-2878 (HST)
805/650-2879 (V.32)

SPECIAL CUSTOM VERTICAL APPLICATION NETWORK INSTALLATION, TRAINING & SUPPORT

DISTRIBUTION

Multi-user invoicing, perpetual inventory in several locations, bar code capabilities and much more. Accounts receivable /payable. Use w/ existing or supplied General Ledger.. **CALL**

LEGAL

Multi-user client billing, scheduling and statute monitoring. Comprehensive word processing. Use with several on-line law libraries, incl. LEXIS..... **CALL**

MEDICAL

Multi-user patient billing & records system. Complete with electronic claims submission and more. Bar code data entry for speed and ease of use. Start small, expand later.. **CALL**

LARGE SATISFIED CUSTOMER REFERRAL BASE, CALL FOR COMPLETE INFORMATION

\$2,500 INSTANT CREDIT AVAILABLE • CALL TODAY: 805/650-0188

ALL * PRICES SHOWN ARE WHOLESALE AND REFLECT AN ADDITIONAL 3% CASH/DISCOUNT. ON-LINE STORES, INC.'S WHOLESALE + 7% PURCHASERS PAY JUST 7% ABOVE THE WHOLESALE PRICE. PLUS SHIPPING AND HANDLING. Minimum Shipping \$5 per order. Prices subject to change. Products subject to availability, and may be obsolete versions. This ad supersedes all previous.

INTERNATIONAL ORDERS WELCOME

FAX: 805/650-0195

FAX COMBOS, MODEMS, VOICE/MAIL

ALL NEW! **V.42** True 9600 Plus Compatible to Most Standards \$ **189***

4800 **FAX** 2400 Baud Hayes Comp. Modem W/ 4800 Baud Send/FAX \$ **79***

9600 Baud Send/Receive Fax Card\$139*
4800 BPS Lev. V MNP Int. Modem 89*
4800 BPS Lev. V MNP Ext. Modem CALL
2400 Baud Hayes Comp. Int. Modem 59*
2400 Baud Hayes Comp. Ext. Modem 89*
1200 Baud Hayes Comp. Closeouts 39*
19.2 K-Baud True V.32 Int. Modem 399*
One-Line Switch Fax/Modem/Voice 99*
P/W Voice/Mail System Single Line 199*
P/W Voice/Mail System Multi-Line ..CALL
MULTI-TECH MT224EH, Lev. V MNP 299*
MULTI-TECH MT932EA, True V.32 699*
MULTI-TECH MT208AH, IRS Standard 599*
US ROBOTICS 1200/2400 Baud Fr. 59*
US ROBOTICS Courier E Lev. V MNP 299*
US ROBOTICS HST/HST-Dual Std. Fr....499*

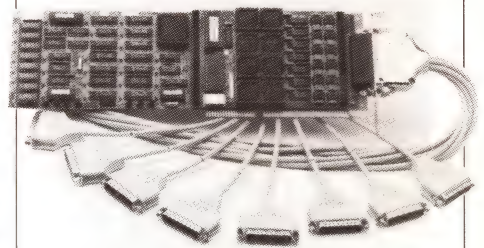
Ask About:

TELEBIT • MICROCOM • ZOOM • UDS • AND MORE!

NETWORKING & CONNECTIVITY

3COM EtherLink II, Most Popular\$199*
DCA IRMA 2 & 3 Networks, Fr. 399*
DCA Macintosh IRMA Networks, ...CALL
DIGIBOARD 4/8 Port RS232 Card, Fr. 369*
DIGIBOARD 10 Port Intelligent Card.....CALL
TOPPS Apple/IBM Networking.....CALL
WEST/DIG EtherCard/Plus Fr.....189*
WEST/DIG Enhanced StarLAN.....189*
PC/WORKS 8/16 bit LANCard Fr. 99*
NOVELL Factory Auth., Consulting.....CALL
LANTASTIC 2 MB Starter Kit 395*
LANTASTIC 10 MB Starter Kit.....595*
SANTA CRUZ Xenix 286/386 Fr. 399*
SANTA CRUZ Development System CALL

Multi Line BBS Information Host System



The On-Line Store has announced the first reasonably priced professional Bulletin Board/E-Mail System that instantly transforms any IBM or compatible computer into a secure, reliable Information Host System.

Multi-User On-Line Databases

A flexible database feature provides the virtually unlimited organization of either structured or unstructured databases, each with its own "Key-Word Search" capabilities.

Features like these, combined with a fully integrated Electronic Mail System, make this complete and comprehensive package the only choice for any serious business application.

9600 Baud & Beyond Modem Support

There's no reason to limit yourself to "snail's paced speeds." Now a simple software setup allows you to configure various modems at different baud rates on up to 32 dial-up telephone lines at speeds from 300 to 19,200 BPS and beyond.

A list of hundreds of systems presently on-line include many major corporations, along with hundreds of successful start-up firms. All report their complete satisfaction with this unique product; it runs under nothing more than DOS.

Extensive upload options allow the organization and presentation of data, graphics, text and program files into an easy-to-use download library available to users so authorized.

On-Line's system installs within minutes right out of the box, and comes with a 30-day money-back guarantee.

If You Need More Information

To learn more about this revolutionary software system, call Bill Jones at 805/650-0188. For the nominal fee of \$10, he'll arrange to have demonstration disks, full documentation, case studies, a comprehensive "how-to" handbook, and information about the On-Line Store's exclusive "instant business" add-on modules rushed to you via return mail.

online
STORES, INC.

PC Magazine says "...Arlington offers worry-free mail order purchasing at reasonable rates!"

IBM PERSONAL SYSTEM II

Model 30, 286, 40 MB, w/Monitor	\$1999
Model 50Z, 30 MB, w/Monitor	\$2299
Model 55SX, w/60 MB w/Monitor	\$2999
Port. 70/120	\$5695
Model 70, w/60 MB and Monitor	\$3749
Model 70, w/121 MB and Monitor	\$4499

6 Month Warranty

COMPAQ 286E

(12 MHz) 40MB, 1MG Memory,
Mono VGA Card & Monitor ... \$2299

COMPAQ PORTABLES

SLT 20/SLT 40	\$3749/\$4199
LTE 20	\$2149
LTE 286 20/40	\$2899/\$3495

COMPAQ 386

Model 386S MOD I	\$2099
Model 386S w/40 MB (16 MHz)	\$2495
Model 386E w/40 MB (20 MHz)	\$3995
Model 386E w/100 MB	\$4249
Model 386-33 w/84 MB	\$7399
Model w/110 MB-25 MHz	\$6295

6 Month Warranty

BRAND NAME COMPUTERS

286E, 12 MHz, 1 MG Memory, 40MG
Drive, Mono Card & Monitor . \$1099

386SX, 16 MHz, 1MG, 40MG,
Mono Card & Monitor \$1595

386E, 20 MHz, 1MG, 40MG,
Mono Card & Monitor \$1895

AST PREMIUM

286 — 512K, 48 MB, mono
monitor \$1699

386 5V — 386SX, 40 MG,
VGA, mono monitor \$2199

386C — 20 MHz, 40 MB,
mono monitor \$3199

386 25 MHZ — 40 MG,
mono monitor & card ... \$4199

PANASONIC

FX1650 — 8086, 640K,
3 1/2" floppy, 20 MG,
monitor \$699

MODEMS

Hayes 1200	\$279
Hayes 2400	\$329
Intel 2400	\$139
Intel 2400 Ext.	\$169
Everex 1200	\$79
Everex 2400	\$119
Everex 2400 External	\$169
US Robotics 9600	\$579

CHIPS

64K Ram Chips	9 for \$20
256K/1 MG Chips.. each	\$5/\$8
256K/1MB Simms	\$40/\$89
Compaq 386 1 MB	\$199
Compaq 386 4 MB	\$399
Compaq 386 2 MB-33	\$449
IBM 30-286 512K	\$119
IBM 70 & 80 2 MB	\$349
Compaq SLT 1 MB	\$349
Intel 8087-3	\$99
Intel 8087-2	\$119
80287-6MHZ/8MHZ	\$149/\$189
80287-10XL	\$209
80387-16/80387-SX	\$319/\$299
80387-20	\$359
80387-25/80387-33	\$439/\$549
80C287-A	\$269

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	\$169
AST 6 Pack 286	\$199
AST Rampage Plus	\$369
Orchid Tiny Turbo	\$219
Orchid Extra	\$259
Intel Above 286+	\$329
Intel Above 286+/2 MG	\$499
Intel Plus 8 w/2 MG	\$539
Intel 386 PC w/1 MG	\$515
Intel 386 AT	\$899
Irma Board III	\$409
AST 5251-II Plus	\$499

FAX & DIGIT.

Intel Connection	\$489
Summasketch 12x12	\$339
Summasketch 12x18	\$579
Sharp FO-230 Fax	\$649
Sharp FO-333 Fax	\$749

DRIVES & TAPES

Ext. 5 1/4" for PSII	\$159
Ext. 1.2 for PSII	\$179
Toshiba 3 1/2" 720K	\$69
Toshiba 3 1/2" 1.44	\$79
Everex 40 MB Tape	\$259
Everex 60 MB Tape	\$659
Irwin 40 MB Tape	\$399

SEAGATE HARD DISKS

20 MB for XT (ST225)	\$249
30 MB for XT (ST238)	\$259
48 MB 3 1/2" (157N-Kit)	\$339
40 MB for AT (ST251-1)	\$289
80 MB for AT	\$549
80 MG 296 Kit	\$429

IOMEGA

5 1/4" 20 MB Int. w/card	\$899
5 1/4" 44 MB Int. w/card	\$1099
Dual 20 Ext. w/card	\$1769

PLUS

Hard Card 20 MB	\$489
Hard Card 40 MB	\$549
Hard Card 80 MB	\$659

CONNOR HARD DRIVES

40 MB/100MB	\$389/\$649
-------------------	-------------

PRINTERS

EPSON

VERY COMPETITIVE PRICES!!!

LX 810 .. \$173	LQ 850 .. \$459
FX 850 .. \$299	LQ 860 .. \$549
FX 1050 .. \$399	LQ 950 .. \$469
LQ 510 .. \$275	LQ 1010 .. \$409
LQ 2550 .. \$859	LQ 1050 .. \$599
EPL Laser 6000...\$799	

OKIDATA

ML 320 .. \$339	ML 390 .. \$459
ML 321 .. \$459	ML 391 .. \$629
ML 380 .. \$359	ML 393 .. \$969

CITIZEN

180D \$149	HSP500 .. \$309
GSX140 .. \$299	HSP550 .. \$429

PANASONIC

1124 \$279	1624 \$349
1180 \$169	1695 \$399
1191 \$229	4420 \$899
4450I Laser.....\$1199	

HEWLETT-PACKARD

Laserjet III	\$1579
Laserjet IIP w/Toner	\$959
Deskjet Plus	\$669
Laserjet IID	\$2479
Pacific Data 1 MG	\$149
Pacific Data 2 MG	\$199
Pacific Data 4 MG	\$399
Headline Cartridge	\$199
Pacific Page	\$349
Pacific Outlines	\$199
Plotter-in-Cartridge	\$229
Pacific Data 25 in 1 Font	\$249
Intel Visual Edge	\$399

LAPTOPS

TOSHIBA

1000/1200HD	\$659/\$1999
3100/3200	\$2699/\$3399

NETWORKING

Advanced Network 2.15	\$1799
SFT Network 2.15	\$2699
ELS Level I 4 User	\$439
ELS Level II 8 User	\$1159
1000 Ethernet	\$199
NE2000	\$199

SOFTWARE

D Base III Plus	\$419
D Base IV	\$459
Harvard Graphics	\$289
IBM Displaywrite IV	\$229
Logitech Mouse	\$74
Lotus 123 2.2/3.0 ...	\$329/\$389
Microsoft Mouse	\$99
Microsoft Windows	\$69
Microsoft Word	\$219
Multimate Version IV	\$279
R Base for DOS	\$439
Symphony	\$419
Ventura Desktop Publ. ...	\$509
Wealth Builder	\$149
Word Perfect 5.1	\$249
Wordstar	\$189

VIDEO BOARDS

ATI VGA Edge	\$179
ATI VGA Wonder	\$219
ATI VGA Wonder 512	\$269
Everex EGA/VGA	\$89/\$119
Hercules Graphics Plus ..	\$179
Orchid Pro Designer	\$239
Orchid Pro w/512K	\$289
Paradise VGA	\$159
Paradise +16	\$199
Paradise VGA 1024	\$199
Vega VRAM 512K	\$419
Vega VGA	\$199

MONITORS

mitsubishi

EGA	\$339
Diamond Scan	\$489
HL6605 16"	\$1175
HL6905 20"	\$1899

NEC

Multisync IIA	\$469
Multisync IIID	\$599
Multisync IVD	\$1149
Multisync VD	\$2299

PRINCETON

Ultrasync/Ultra 16 ..	\$479/\$845
-----------------------	-------------

GOLDSTAR

Color/EGA	\$229/\$319
VGA	\$309

**Arlington
Computer
Products, inc.**

Defective software will be replaced with
the same item only. We cannot guarantee
compatibility. All sales are final and
returned shipments are subject to a
restocking fee.

HOURS C.S.T.

8 am - 6:30 pm — Mon.-Fri.
9 am - 5 pm — Sat.

1970 CARBOY
MT. PROSPECT, IL 60056

FOR ORDERS & SYSTEMS QUOTES:

800-548-5105



CUSTOMER SERVICE AND IN ILLINOIS 708-228-6333

SHIPPING 708-228-9748

TECHNICAL ASSISTANCE 708-228-1470

FAX 708-228-0516

Prices and Availability Subject To Change Without Notice

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

MEMORY

NO SURCHARGE
FOR MC & VISA

★★ CALL TOLL-FREE 800-433-3726 ★★

Individual D-RAM Chips

	MEMORY FOR IBM & APPLE				
	60NS	70NS	80NS	100NS	120NS
1 Meg x 1	9.50	6.75	6.25	6.00	5.75
4 Meg x 1	—	—	Call	Call	—
1 Meg x 4	—	—	Call	Call	—
1 Meg x 4 (Zip Pack)	—	—	69.00	—	—
256 x 4	Call	8.50	7.00	6.75	6.50
256 x 1	3.15	3.00	2.40	1.90	1.70
64 x 4	—	—	3.00	2.90	2.80
64 x 1	—	—	—	1.50	1.30

SIMM MODULES (Add \$500 for SIPP)

	60NS	70NS	80NS	100NS	120NS	150NS
1Meg x 9 (IBM)	76.00	73.00	65.00	62.00	59.00	—
1Meg x 8 (Apple)	74.00	71.00	63.00	60.00	57.00	—
4Meg x 9 (IBM)	—	—	390.00	380.00	—	—
4Meg x 8 (Apple)	—	—	380.00	370.00	—	—
256 x 9 (IBM)	27.00	26.00	21.00	20.00	19.00	18.00
256 x 8 (Apple)	26.00	25.00	20.00	19.00	18.00	17.00
MACINTOSH FX	—	4 Meg Upgrade	—	—	—	299.00

INTEL Math Chips

8087	79.00	80287-XL	Call
8087-2	114.00	80287-XLT	Call
8087-1	159.00	80387-16	299.00
80287-6	124.00	80387-16SX	299.00
80287-8	195.00	80387-20	355.00
80C287A	269.00	80387-25	455.00
80287-10	205.00	80387-33	555.00

AST MEMORY MODULES

500718-001	for use with 386-25 MHz (1 Meg upg)	95.00
500718-002	for use with 386, 33 MHz (1 Meg upg)	109.00

Please call for speeds you don't see. PLCC, SOJ, Zip, Flat Packages also available. Price and availability are subject to change. California Orders, please add 6.75% sales tax. Returned orders are subject to a 20% restocking fee. No surcharge for MasterCard or Visa, add 6% surcharge for American Express. Prepaid orders, MC, Visa, Fortune 500, Government, Institutional P.O.'s & P.O.'s from Qualified Corporations
ALL CREDIT CARD CHARGES VERIFIED FOR FRAUDULANT USE
SORRY, NO REFUNDS AFTER 30 DAYS—EXCHANGES ONLY.

IBM PS/2 SIMM MODULES

IBM PART NO.	WORKS WITH MODEL NO.	L.A. TRADE'S COMPT. PRICE
30F5348 (512K)	30-286	49.00
30F5360 (2Meg)	30-286, 50 MTHR BD.	175.00
6450375 (1Meg)	80-041	169.00
6450379 (2Meg)	80-111, 311	249.00
6451060 (4Meg)	80-A21, 80-A31, 80-111, 80-311	549.00
6450603 (1Meg)	50Z, 55SX, 70-E61, 70-121, P-70	99.00
6450604 (2Meg)	50Z, 55SX, 70-E61, 70-121, P-70	169.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	179.00
78X8955 (128K)	25	35.00
34F2933 (4Meg)	65SX, 55SX, MTHR BD.	549.00
34F3077 (2-16Meg)	EXP. BD. 603, 604, 34F2933	Call
34F3011 (4-16Meg)	EXP. BD. 603, 604, 34F2933	Call

Other PS/2 models not shown please call for quote
Please call for any questions on these SIMM Modules

COMPAQ MEMORY MODULES

COMPAQ PART NO.	WORKS WITH MODEL NO.	L.A. TRADE'S COMPT. PRICE
116561-001 (8Meg Module)	DP486/25, SYSTEM PRO	Call
116568-001 (32Meg Module)	DP486/25, SYSTEM PRO	Call
115144-001 (2Meg Module)	DP386/33MHz, DP486/25, SYSTEM PRO.	219.00
113131-001 (1Meg Module)	DP386/25MHz	219.00
113132-001 (4Meg Module)	DP386/25MHz	319.00
113131-001 (1Meg Module)	DP386/20MHz	129.00
113132-001 (4Meg Module)	DP386/20MHz	319.00
113633-001 (1Meg Board)	DP386S	249.00
113634-001 (4Meg Board)	DP386S	549.00
113646-001 (1Meg Module)	DP386S	129.00
112534-001 (4Meg Module)	DP386S	319.00
113644-001 (1Meg Board)	DP386/20E	249.00
113645-001 (4Meg Board)	DP386/20E	549.00
113131-001 (1Meg Module)	DP386/20E	129.00
113132-001 (4Meg Module)	DP386/20E	319.00
108071-001 (1Meg Kit)	DP386/16MHz	179.00
108069-001 (1-2Meg Board)	DP386/16MHz	399.00
108070-001 (4-8Meg Board)	DP386/16MHz	995.00
108072-001 (4Meg Kit)	DP386/16MHz	399.00
107651-001 (1Meg Kit)	PORTABLE 386	269.00
107653-001 (4-8Meg Board)	PORTABLE 386	879.00
107654-001 (4Meg Dghtr Board)	PORTABLE 386	879.00
107331-001 (512K Kit)	PORTABLE III	99.00
107332-001 (2Meg Board)	PORTABLE III	219.00
110235-001 (1Meg Module)	COMPAQ SLT/286	239.00
113131-001 (1Meg Module)	DP286/E	129.00
113132-001 (4Meg Module)	DP286/E	319.00
113012-001 (512K Kit)	DP286	89.00
113012-001 (512K Kit)	COMPAQ LTE/286	Call
113012-001 (2Meg)	COMPAQ LTE/286	Call

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	AMT UPGRADED	LIST PRICE	L.A. TRADE'S COMPT. PRICE
T1000SE/XE	1 Meg Card	—	279.00
	2 Meg Card	—	379.00
T1200XE	2 Meg Card	—	249.00
T1600	2 Meg	1299.00	279.00
T3100E	512K Kit	399.00	195.00
	2 Meg Kit	1299.00	219.00
T3100SX	2 Meg	—	219.00
	4 Meg	—	649.00
T3200	3 Meg Board	1699.00	379.00
T3200SX	2 Meg Kit	1099.00	219.00
	4 Meg	—	649.00
T5100	2 Meg Board	1299.00	219.00
T5200	2 Meg Kit	999.00	219.00
	8 Meg	—	1695.00
T8500	2 Meg Kit	—	219.00
Zenith Supersport 286	1 Meg	—	179.00
NEC Prospeed 286	1 Meg	—	269.00
NEC Prospeed 286	4 Meg	—	699.00
NEC Prospeed 386	2 Meg	—	379.00
NEC Prospeed 386	8 Meg	—	1699.00

IIT ADVANCED MATH CO-PROCESSOR

• 5 year warranty • 2-3 times faster than Intel
• Plug & object code compatible with Intel
2C87-8MHz 169.00 2C87-125MHz 199.00
2C87-10MHz 179.00 2C87-20MHz 259.00

CYRIX FASMATH PROCESSOR

• 5 year warranty • Programs executed up to 3 times faster
• Plug & object code compatible with Intel
83D87-16MHz 279.00 83D87-33MHz 479.00
83D87-20MHz 319.00 83D87-16SX Version 279.00
83D87-25MHz 389.00 83D87-20SX Version Call

H.P. LASER JET II, IID & IIP, III Memory Upgrades

	I, IID	IIP, III
1 Meg Upgrade	99.00	119.00
2 Meg Upgrade	149.00	169.00
4 Meg Upgrade	249.00	269.00

NTX APPLE LASER WRITER

4 Meg module upgrade 299.00

H.P. COMPATIBLE FONT CARTRIDGE

Turbo 25 contains every English language Font in Pacific Data's Current 25 Cartridges In One! Cartridge
plus 2 Headline Fonts and with 6 additional U.S. Fonts.
ONLY \$199.00
Made by UDP Data Product, Inc.

MEMORY BOARDS

IBM Compatibles, Compaq & PS/2

BOCA AT PLUS

16 BIT MEMORY BOARD FOR 286, 386 AT
OK-8Meg Board • 4.0 Lim Compatible • New 5 Year Warranty
Conventional, Expanded and Extended Memory
Supports DOS, OS/2, LIM/EMS & EEMS
Versatile Split Memory
Addressing • Operates with CPU Speeds to 33 MHz
Supports Desqview, Multitask operations
OK — \$135.00 2 Meg — \$238.50
4 Meg — \$342.00 8 Meg — \$549.00
Board made by Boca Research, AT plus

BOCA XT 8 BIT BUS

• Expanded memory for XT • Lim 4.0 compatible
O-K \$109.00 1Meg \$170.00
2Meg \$235.00

BOCA 50Z

• 0-2Meg for PS/2 50, 50Z, 60
• 0 wait state ram
O-K board only \$159.00
2Meg with board \$271.00
Uses 1Megx1-80NS

EVEREX

EV-3000
• 0-3Meg, 4.0 Lim compatible • Uses 256x1 chips
\$99.00
EV-8000
• 0-8Meg, 4.0 Lim compatible • Uses 1Megx1 chips
• Supports multi-tasking & DMA multi-tasking in hardware
\$219.00
EV-10000 EV-158, 0-10Meg \$179.00

• WE WILL TRY TO MATCH OR BEAT ANY
ADVERTISED PRICE •

All products Brand New & Guaranteed • We Buy Excess Inventory
Trademarks are registered with their respective companies.



20950 S. Normandie, Unit M • Torrance, CA 90502

ORCHID RAM QUEST 16/32

0-8Meg of Backfill, Expanded or Extended Memory
Works with PS/2 Models 50, 50Z, 55SX, 60, 70, 80
Full Support for LIM/EMS 4.0 and OS/2 — 0 Wait State Ram
4 Year War. — Comes w/Ser, Par Ports and Free Ser Cable
OK — \$329.00 2 Meg — \$453.00
4 Meg — \$577.00 8 Meg — \$825.00

ORCHID RAM QUEST 8/16

32 MEG MEMORY BOARD FOR PC, XT, AT AND 386
Supports Conventional, Extended & Expanded Memory
for Maximum Software Compatibility
Easy to Install, Takes 3 Minutes, No Switches, No Jumpers
4 Year War. — Number of EMS Sets of Registers 8
OK — \$499.00 4 Meg — \$759.00 8 Meg — \$1289.00
16 Meg — \$2079.00 32 Meg — \$3659.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC, XT, 64K 129.00
Same as above w/384K 159.00

213-782-2880
FAX: 213-782-0240

CALL
TOLL FREE

1-800-433-3726
(US and Canada)

ESTAB.
1985

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
Sat. 10:00 a.m. to 12:00 noon



UNITED COMPUTER EXPRESS

724 7 AVE, NEW YORK CITY, NEW YORK 10019

1800-448-3738 212-397-1081

ALL UNITS ARE TESTED AND FORMATED BEFORE SHIPPING

IBM

ORIGINAL IBM AT 25 PC PRO PACKAGE

80286 Processor • 640K RAM
5 1/4 • 3 1/2 Floppy Drive • Segate
40 Mg H.D. VGA Adapter • VGA
Color Monitor • Software Bundle
10 Diskettes



\$2399

IBM AT—80286 • 6 MHz

84 Keyboard **\$899**

IBM AT Model 339—80286 • 512K

RAM • 8 MHz • 30 Mg H.D. •

101 Keyboard **\$1288**

IBM XT w/20 Mg H.D. • 8088 •

Expandable to 640K **\$1038**

EPSON

EPSON II+ IBM AT COMPATIBLE 26PC DEAL

11+ CPU-KeyBoard-1.2 Mg F/D-12'
Monitor-Software Bundle-10
Diskettes-Cleaner



\$828

w/20 MG Hard Drive **\$1038**

40 MG Hard Drive-VGA System **\$1268**

EPSON 111+ -80286-12 MHz-

640K RAM-6 Device Slots **\$1088**

EPSON 386SX-80386-16 MHz-

1 Mg RAM-10 Keyboard **\$1348**

EPSON 386/20-80386-20 MHz-

1 Mg RAM-101 Keyboard **\$2148**

IBM

IBM PERSONAL SYSTEM II

MODEL 30-286 w/30MB **\$1799**

MODEL 502 w/30MB **\$1998**

MODEL 55SX w/60MB **\$3048**

MODEL 65SX w/60MB **\$3785**

MODEL 65SX w/120MB **\$4228**

MODEL PORTABLE P70-031 **\$3495**

MODEL 70-E61/60MB **\$3499**

MODEL 70-121 w/120MB **\$4409**

MODEL 70-B61/60MB **\$8999**

MODEL 70-B21/120MB **\$9595**

MODEL 80-071 w/70MB **\$3995**

8513 COLOR MONITOR **CALL**

8515 COLOR MONITOR **CALL**

EPSON

EPSON EQUITY 1+ IBM XT COMPATIBLE 26 PC PACKAGE

1+ CPU • Keyboard •
640K RAM • 360K • Floppy Drive
Software Bundle • 10 Diskettes
Disc Drive Head Cleaner



\$398

w/20 Mg Hard Drive **\$598**

w/40 Mg Hard Drive • Color System **\$899**

EPSON IE—8088 • 12 MHz •

640K RAM • 101 Keyboard **\$588**

LEADING EDGE

MODEL D IBM XT Compatible

8088 • 512K • 360K F.D. • MGA/CGA Graphic
Card • Graphic Monitor Keyboard • DOS •
20 Month USA Warranty

\$499

D2

80286 • 640K • RAM • 12 MHz • 1.2 Mg F.D.
101 Keyboard • VGA Adapter • Graphic
Monitor •

\$828

D3/SX

80386 SX • 16 MHz • 1 MB RAM • VGA
Adapter • Graphic Monitor • 101 Keyboard •
20 Month Warranty

CALL

D3

80386 • 20 MHz • 1 MB of 32 Bit RAM
101 Keyboard • VGA Adapter
20 Month Warranty

CALL

Leading D3/25

80386 • 25 MHz • 4 MB of 32 Bit RAM
32KB Cache Memory • VGA Adapter
101 Keyboard •

CALL

Leading Edge Laptop

DLT 3864 • 80386 • 16 MHz • 1 Mg RAM •
VGA Display • 40 Mg H.D.

\$2499

VENDEX

HEADSTART 300

80286 • 12.5 MHz • 1MB RAM
1.2 MB F.D. • 1.44 MB F.D.
4 0MG H.D. • VGA System •
Software Bundle



CALL

HEADSTART 300CD

80286 • 12.5 MHz • 1MB RAM
1.44 MB F.D. • 680MB CD RAM
40MG H.D. • VGA System • Software Bundle

CALL

HEADSTART 500

80386 • 16MHz • 1MB RAM
1.44 MB F.D. • 1.2MB F.D. • 80MB H.D.
VGA System • Software Bundle

CALL

HEADSTART 500CD

80386 • 16MHz • 2MB RAM
144MB RAM • 680MB CD RAM • 80MB H.D.
VGA System • Software Bundle

CALL

HEADSTART III **\$1299**

HEADSTART Turbo 286 **\$1499**

NEC

Powermate 286

40 MG Hard Drive—VGA
System 28 pc. Deal **\$1248**

80286-10 MHz-512K RAM-1.2 Mg F/D

40 Mg. H.D.-VGA Adapter & Monitor

Powermate 386 SX Plus **\$1995**

40 MG Hard Drive-VGA

System 26 pc. Package 80386-16 MHz-2

MB RAM-1.2 Mg F/D 40 Mg. Hard Drive-

VGA Adapter & Monitor

Powermate 386/20 **\$2099**

80386-20 MHz-2Mg. RAM-VGA Adapter

LAPTOPS

PANASONIC LAPTOP W BACKLIT SCREEN

\$768



• T-1000 **\$569**

• T-1000SE **\$1078**

• T-1000XE **\$1788**

• T-1200XE **\$2648**

• T-1200 **\$1099**

• T-1200HB **\$1799**

• T-1600/40 **\$2948**

• T-3200SX **\$3899**

• T-3100SX **\$3788**

• T-3100SX 80mg **\$4295**

• E5200/100 **\$5048**

TEXAS INSTRUMENTS

• LT-286 Model 12 **CALL**

• LT-286 Model 25 **CALL**

• LT-286 Model 45 **CALL**

PANASONIC

PANASONIC FX-1650

IBM XT Compatible **\$328**

8086 • 640K • 3 1/2 H.D. • Monitor

PANASONIC FX 1950 **\$1299**

IBM AT Compatible

80386 • 20 MHz • 2 MB RAM

C-1381 Multiscan Monitor **CALL**

LAPTOPS

SHARP

• PC-5541 **\$2299**

• PC-4601 **\$988**

• PC-6220 **CALL**

• MZ 100 **CALL**

NEC

• ULTRALITE **\$1499**

• PROSPEED 286 20 **\$2699**

• PROSPEED 286 40 **\$2899**

• PROSPEED 386 40 **\$3899**

• PROSPEED 386 100 **\$4399**

COMPAQ

• LTE 286 20 **\$2699**

• LTE-286/40 **\$2995**

• SLT 286 **CALL**

• LTE 8088 20 **\$1995**

ZENITH

• 286/20mg **\$2328**

• 286/40mg **\$2539**

• 286E/20mg **\$2799**

• 286E/40mg **\$2999**

PACKARD BELL

• PB-286 UGA **\$2499**

WE CARRY A FULL LINE OF
MEMORY UPGRADES. FOR
YOUR LAPTOP CALL FOR PRICES.

Premier

Premier 1400

80286 • 12MHz • 1MG RAM
1.2 MG F.D. • 1.44 MG F.D. • Segate 40MG H.D.
ZERO WAIT STATE • VGA Graphic

CALL

Premier 1500

80386 • 16MHz • 1MG RAM • 40MG H.D.
1.2 MG F.D. • 1.44MG F.D.
ZERO WAIT STATE • 101 Key Board

CALL

HYUNDAI

HYUNDAI 286E

80286-12 MHz-640KB-Mono Display
Card Monitor-101 Keyboard
MS-DOS-GW Basic.

\$628

w/20mg H/D **\$899**

w/40mg H/D **\$999**

HYUNDAI 386 SX-1 Mg. RAM 16 MHz **\$948**

HYUNDAI 386C 1 Mg. RAM 20 MHz **\$1299**



P R I N T E R S

FAX

FAX

FAX

EPSON

LX-810 **\$169**

LQ-510 **\$299**

FX-850 **\$325**

LQ-1050 **\$628**

LQ-850 **\$448**

LQ-950 **\$555**

LQ-1050 **\$648**

LQ-2550 **\$899**

STAR

NX-1000 **\$159**

NX-1000 II **\$179**

NX-1000 RAINBOW **\$219**

NX-2400 **\$269**

XB-2410 **\$419**

XB-2415 **\$549**

XR-1000 **\$339**

XR-1500-W.C. **\$419**

NEC

P-2200 **\$288**

P-6200 **\$499**

P-6300 **CALL**

PANASONIC

KXP-1180 **\$175**

KXP-1191 **\$215**

KXP-1092 **\$229**

KXP-1524 **\$295**

KXP-1524 **\$499**

KXP-1595 **\$415**

KXP-1692 **\$399**

KXP-1695 **\$389**

KXP-1624 **\$389**

KXP-4420 **\$988**

KXP-4450 **\$1299**

CITIZEN

GXS-140 **\$310**

Color Option Kit **CALL**

KXP-1624 **CALL**

HSP-550 **CALL**

HSP-550 **CALL**

BROTHER

M-1824L N.C. **\$499**

M-1924L W.C. **\$699**

HL 8e 1 Mg RAM **\$1848**

Call For Font Price

HEWLETT PACKARD

HP LASER JET

Series II **\$1248**

HP LASER JET

II P **\$928**

HP LASER JET

Series III **\$1548**

HP Desk Jet **\$579**

HP Desk Jet Plus **\$685**

HP Paint Jet **\$988**

HP Laser Jet II D **\$2399**

HP Laser Jet III D **CALL**

1 MG RAM. IIP. III. II **\$189**

2 MG RAM. IIP. III. II **\$288**

2000 **\$629**

3000 **\$768**

EPSON

1000 **\$589**

2000 **\$629**

3000 **\$768**

SHARP

FO-333 **\$72**

</



INTERNATIONAL COMPUTER DISCOUNTS

**LOWEST DISCOUNT
PRICES ANYWHERE**

1-800-275-6100

(201) 944-5727

**Inquiries &
Customer Service**

Open 7 Days From 9:00 AM • Overnight Delivery Guaranteed

American Express, Visa, MasterCard & Discover Accepted • Certified Checks & Money Orders Accepted Only With Prior Authorization • COD Available On Request

IBM XT Basic System



Keyboard, Monitor,
Single Floppy
10 Free Diskettes **\$749**

Package:

- (A) Keyboard, Color Monitor
Dual Floppy,
10 Diskettes **\$899**
- (B) Keyboard, EGA Monitor,
20 MB Hd, Dual Floppy,
10 Diskettes **\$1199**
- (C) Keyboard, VGA Monitor,
Dual Floppy, 40 MB Hd,
10 Diskettes **\$1549**

IBM AT Basic System



80286 - 512K - 6MHZ
Keyboard, Single
Floppy, 10 Diskettes **\$999**

Package:

- (A) 80286 - 512K Ram
8 MHZ - 30 MB Hd
Keyboard, Single Floppy,
10 Diskettes **\$1449**
- (B) 80286 - 640K Ram
8MHZ - 40 MB Hd
Keyboard, VGA Monitor,
Dual Floppy,
10 Diskettes **\$2388**

NEC

Powermate 286

Pro System (IBM AT Comp.)

80286 - 10 MHZ - 512K Ram
1.2 MG - F/D - 40 MB Hd **\$1288**
VGA Monitor

Powermate 386SX Plus

(IBM AT Compatible)
70386SX - 16 MHZ - 2 MB Ram
1.2 MG F/D - 40 MB Hd **\$1949**
VGA Monitor

AST COMPUTER

Premium 286



(IBM AT Compatible)
80286-512K Ram - Dual Floppy,
40 MB HD - Keyboard
VGA Monitor DOS System
10 Diskettes **\$1699**

TOSHIBA LAPTOPS

T-1000 512K **\$579**
NEW T-1000 XE & T-1200 **CALL**
T-1000 SE 1 MEG **\$1049**
T-1200 HB Backlite 20M HD **\$1799**
T-1600 Backlite 20M HD **\$2599**
T-1600 Backlite 40M HD **\$2999**
T-3200SX 16MHZ 40MB **\$3799**
T-3100SX **\$3699**
T-5200 40 MB **CALL**
T-5200 100 MB **CALL**



ZENITH LAPTOPS

Mini Sport 1 MEG **\$1099**
Mini Sport 2 MEG **\$1599**
184-1 2 Floppy **\$1199**
184-2 20 MB **\$1639**
286 20 MB **\$2299**
286 40 MB **\$2499**

EPSON

Equity 1+

(IBM XT Comp.)

Basic System

Keyboard - Monitor - Single Floppy
10 Free Diskettes **\$499**

Package:

- (A) **\$799**
- (B) **\$999**
- (C) **\$1399**



SANYO MBC 16EX

(IBM XT Comp.)

Basic System

Keyboard - Monitor - Single
Floppy - 10 Free
Diskettes **\$599**

Package

- (A) **\$825**
- (B) **\$1099**
- (C) **\$1449**

SANYO MBC 17LX

(IBM AT Comp.)

Basic System

80286 - 1 MB Ram - 6/12 MHZ
Switchable - Keyboard - Single
Floppy-10 Free Diskettes, .. **\$899**

Package

- (A) **\$1299**
- (B) **\$1749**

PANASONIC FX 1650

(IBM XT Compatible)

Basic System

Keyboard - Monitor - Single
Floppy 10 Free
Diskettes **\$499**

PANASONIC FX 1750

(IBM AT Compatible) **CALL**

PANASONIC FX 1850

(IBM AT Comp.) **CALL**

HEAD START COMPUTERS

H.S. III **\$1799**

H.S. 286 w/40 Meg Hd, VGA ... **\$879**

Explorer w/mouse, monitor ... **\$879**

H.S. Lx C.D. Rom ... **\$1668**



MONITORS

IBM **CALL**
NEC **CALL**
SAMSUNG **CALL**
ZENITH **CALL**

Other Models Available—Call

PRINTERS

EPSON PRINTERS

EPSON LX 810 **\$169**
EPSON LQ 810 **Call**
EPSON LQ 850 **\$489**
EPSON LQ 1050 **Call**
EPSON T-1000 **\$199**
EPSON T-750 **\$269**
EPSON T-750 **\$329**
EPSON L-750 **\$429**
EPSON 2000 **Call**
EPSON 4000 **Call**
EPSON 4500 **Call**

PANASONIC PRINTERS
KX-1180 192/36cps **\$169**
KXX-1191 240/48 cps **\$289**

HP Desk Jet

KX-1124 192/48 cps .. **\$299**
HP Desk Jet **\$579**
HP Desk Jet Plus **\$688**
HP Paint Jet **\$999**
HP Laser Jet II D **\$2399**
HP Laser Jet III D **CALL**
1 MB Ram Expander **\$199**
2 MB Ram Expander **\$299**
4 MB Ram Expander **\$449**
25 in one font cart **in stock**

LASER PRINTERS

HP IIP **\$999**
HP LaserJet III **\$1599**



EPSON EPL-600 **\$939**
Panasonic KX4450 ... **\$1299**

OTHER QUALITY PRINTERS

STAR PRINTERS
STAR NX-1000 II **\$159**
STAR NX-2410 **\$279**
STAR NX-2415 **\$399**

DRIVES

HARD DRIVES—SEAGATE

ST-225 (20MB) **\$209**
ST-125 (20MB) **\$229**
ST-238 (30MB) **\$209**
ST-138 (30MB) **\$239**

Other Models Available—Call

FLOPPY DRIVES—TOSHIBA

360K (5¼") **\$69**
1.2MB (5¼") **\$79**
720K (3½") **\$69**
1.44 MB (3½") **\$79**

Other Models Available

MODEMS

Packard Bell **CALL**
Hayes **CALL**
Intel **CALL**
U.S. Robotics ... **CALL**

CARDS & CHIPS

PERIPHERALS CO-PROCESSORS

Mono card ... **\$49**
Color card ... **\$49**
Ega card ... **\$79**
VGA card ... **\$99**

OTHERS

AVAIL.

CALL!!

INTEL
8087-5 **\$89**
8087-8 **\$129**
8087-10 **\$169**
8087-16 **\$199**
80287-10 **\$229**
8087-16 **\$339**
80387-20 **\$389**

SOFTWARE

Adlus Pagemaker **CALL**
D base IV **CALL**
Harvard Graphics 2.13 **CALL**
Lotus V2.2/3.0 **CALL**
Windows 3.0 **CALL**
Excel **CALL**
Word **CALL**
Works **CALL**

MUCH MORE AVAILABLE!!!!

FAX MACHINES

SHARP

FO-215 ... **\$728**
FO-330 ... **\$688**
FO-333 ... **\$848**
FO-510 ... **\$968**
FO-550 ... **CALL**
UX-180 ... **\$588**
UX-350 ... **\$928**

PANASONIC

KXF-80 ... **\$568**
KXF-100 ... **\$599**
KXF-120 ... **\$748**
KXF-145 ... **\$499**
KXF-220 ... **\$978**

MURATA

M-900 ... **\$499**
M-1400 ... **\$599**
M-1800 ... **\$699**
M-1850 ... **\$799**

TOSHIBA

3200 ... **\$528**
3300 ... **\$599**
3400 ... **\$648**
3600 ... **CALL**
3750 ... **\$828**

RICOH

RF-810 ... **\$588**
RF-850 ... **\$618**
RF-900 ... **CALL**
RF-910 ... **CALL**
RF-920 ... **CALL**

EPISON: 1000...\$668; 2000...\$748; 3000...CALL; PANAFAX... CALL

OTHER MODELS AVAILABLE — CALL

INTERNATIONAL TELE-VIDEO MARKETING, INC.

1605 JOHN STREET, FORT LEE, NJ 07024

7 Day Return Policy. All returns must be phoned in for prior authorization. All products must be returned in original factory packaging with blank warranty cards. Shipping, handling & insurance charges are not refundable and returns are subject to a 5 percent restocking fee. All sales final. No Refunds. Credits Only. Quantities are limited. Availability is not guaranteed on all items. Prices subject to change without notice. Not responsible for typographical errors.
© 1989 INTERNATIONAL TELE-VIDEO MARKETING, INC.

REPLACE YOUR CASH REGISTER!



**NEW VERSION 2.0
JUST \$179.95!
(bear included)**

Replace your cash register with the Microbiz Controller Series... the #1 point-of-sale system.

**Business Solutions for
Retail Stores, Liquor Stores,
Video Stores, Hair & Nail
Salons, Auto Repair Shops...**

Flexible Enough to Work for You

You didn't go into business for yourself to do things someone else's way. Fortunately, we did. We've already computerized thousands of different retail stores, video stores, auto repair centers, beauty salons, clothing stores, health clubs, pet, furniture, liquor, and hardware stores . . . So we've learned how to make **The Retail Controller Jr.** flexible enough to do the job for you by building in a number of custom-designed options. Use it with or without a bar code reader, cash drawer, or receipt printer. And, if at a later date you need the additional features of **The Retail Controller Sr.** (accounts receivable, purchase orders, layaway plans), you can upgrade easily and economically at any time.

"Update . . . or Evaporate!"

That's how one of our customers put it. And it's true. In today's increasingly competitive retail environment, store owners need better ways to control their inventory, streamline their operation, and keep in touch with their customers. **The Retail Controller, Jr.** is a powerful point-of-sale program that's so cost-effective and easy to use, you can't afford *not* having it!

Replace Your Cash Register with a Cash Generator!

Can your cash register tell you what's in stock, control your inventory, check and correct prices automatically, provide quicker service, get more repeat business, and optimize your purchasing? **The Retail Controller Jr.** will help you leapfrog past your competition, reduce shrinkage, billing errors, costs, and time. It puts the profit-building speed, accuracy, and power of microcomputers to work for you. It's like replacing your cash register with a cash generator!

Record Control in Record Time

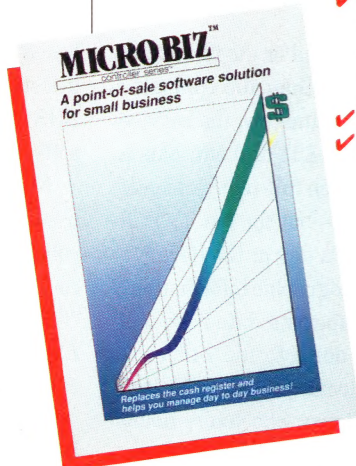
With **The Retail Controller Jr.**, you'll make smarter management decisions because you'll have pushbutton-quick, down-to-the-penny information. Operating at your sales counter, the program captures vital customer and sales data, organizes it, and presents it in neat, accurate reports that eliminate guesswork and improve control.

Bar Code Easy, Feature Packed

The Retail Controller Jr. is designed for first-time computer users. Even a brand new clerk can learn how to process transactions in minutes. The speed and efficiency of barcoding (optional) can keep keystrokes to a minimum. Pull-down menus, on-screen help windows, and "point

and select" customer and product lookup all help to make the program almost intuitively easy to use. All transactions are performed from just one Work Screen. Yet it incorporates many of the features you'd expect to find only in systems costing hundreds of dollars more, features like:

- ✓ automatic credit card verification
- ✓ bar code compatibility
- ✓ color/size matrix
- ✓ multiple pricing levels
- ✓ tracks inventory by size/color/style
- ✓ mailing labels
- ✓ tracks customer history
- ✓ daily closeout reports
- ✓ accepts split tender
- ✓ view in-stock status
- ✓ pull down menus
- ✓ pop-up windows
- ✓ source code available
- ✓ 99 levels of password protection
- ✓ tracks promotional sales
- ✓ prints bar code labels
- ✓ reorder reports
- ✓ extensive sales reports
- ✓ item/invoice discounts
- ✓ tracks sales by employee
- ✓ set limited-time promos
- ✓ links to Quicken, ACCPAC and other popular accounting programs
- ✓ receiving reports
- ✓ pop-up calculator



- ✓ 40- or 80-col. receipts
- ✓ built-in word processor
- ✓ for any IBM PC or compatible with hard disk

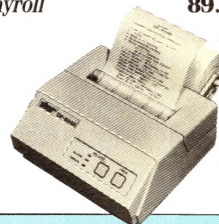
"I can't imagine running my shop without it. The program gives me much better control over all my items and has more than paid for itself."
—G. Truglia, Car-Tune, New City, NY

It Pays for Itself — or You Don't. Guaranteed!

We believe in our product, and thus offer a **100% No-Risk Guarantee**. If you are not satisfied with any unregistered MicroBiz program for any reason, you may return it within 30 days for a complete refund.

■ The Retail Controller Jr.	\$179.95
■ The Video Store Controller Jr.	295.00
■ The Auto Repair Shop Controller Jr.	295.00
■ Cash Drawer	395.00
■ Receipt Printer	495.00
■ Cash Drawer with Receipt Printer	695.00
■ Bar Code Reader	495.00
■ ACCPAC Easy General Accounting	89.00
■ ACCPAC Easy Payroll	89.00

(The Controller Jr. Series automatically links to Computer Associates' ACCPAC modules)



Call for prices on Senior and Multi-user versions. Ask about **The Rental Store Controller**, **Rental-Ease Property Management**, and **The Restaurant Controller**. On-site demonstrations of all packages are available at your local MicroBiz dealer.

CALL FOR DEALER PRICING

Prices and specifications subject to change. NY residents add sales tax.



MicroBiz
400 Executive Blvd.
Elmsford, NY 10523
(914) 592-2190

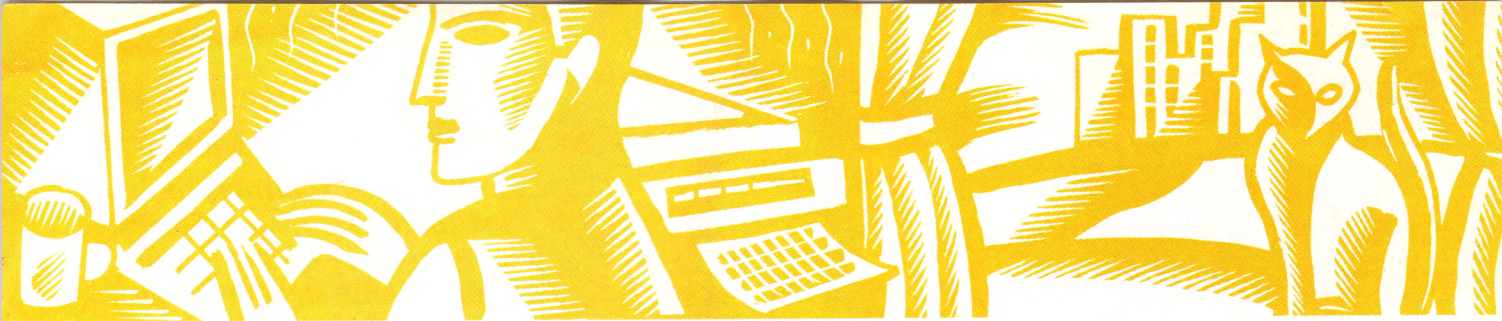


1-800-637-8268

MicroBiz . . . programming your business for success.

Circle 168 on reader service card





TAKING IT HOME

The practical guide to home/office computing

A modem is a must.

Lawrence J. Magid

I've said it many times before: No home computer is complete without a modem and access to an on-line service or electronic mail system. Now I have a powerful ally—IBM has made a built-in 2400-bps modem and two on-line starter subscriptions key elements in the marketing and support of its new PS/1. While you may choose to bring home another brand of PC, I hope you'll put a modem in it. Here are three good reasons why.

The first is Prodigy. If you do buy a PS/1, IBM will give you a free three-month subscription to this on-line service, which is more tailored to nonbusiness home applications than most. I write columns and answer users' questions on Prodigy. But I would use it even if I weren't associated with the service, because it's inexpensive (you get unlimited access for \$9.95 a month) and has interesting entertainment, education, and *personal* business features.

With Prodigy you can make airline reservations, do home banking, shop, read news, or use hundreds of other services without worrying about hourly fees. I use it to arrange all my business travel, and I got lots of good advice from Prodigy members and travel experts

before a recent trip to Europe.

Prodigy avoids charging for on-line time by selling advertising in a banner that appears at the bottom of the screen. The biggest limitation of the service is that it doesn't let you upload or download text files or software.

If it's in-depth information I'm after, I dial up CompuServe. The prices are reasonable as on-line services go, but they're still not cheap—\$12.50 per hour at 1200 or 2400 bps for most features, plus a \$1.50-per-month membership fee. Some unusual features also require a hefty surcharge, so there are months when my CompuServe bill exceeds \$100.

One of my favorite CompuServe features is Computer Database Plus, which

For in-depth information, I dial up CompuServe.

provides abstracts and/or the full text of articles from more than 100 computer publications. Unfortunately, the service costs an additional \$24 an hour, plus a \$2.50 charge for each full-text version of an article. Pricey—but for me it's still cheaper than half a day at the library.

Ever need demographic information? CompuServe's Supersite data base will give you details down to the ZIP code level for every county in the United States. Want to know who you're doing business with? CompuServe lets you access TRW credit reports on more than 13 million businesses. You also can use CompuServe electronic mail and computer bulletin boards, and download public domain software and shareware.

What I can't find on CompuServe I usually find on Knowledge Index, from

Dialog Information Service. I use Knowledge Index to read articles from major newspapers like the *Boston Globe* and *Los Angeles Times*. I've also used it to search through the *Harvard Business Review* and various technical and scientific journals. The newspaper data base gives you the full text of articles, while most of the magazine and journal articles exist only as abstracts.

Knowledge Index doesn't offer all the communications and personal information features of CompuServe, Prodigy, or other on-line services. It isn't as easy to use as CompuServe, it charges more than either (\$24 per hour, but with no additional surcharges), and it's available only on weekends and after 6 p.m. on weekdays. Once you learn it, though, Knowledge Index can be cost-effective and incredibly productive. I usually can complete a search for under \$5.

I've only scratched the surface with these three services; there are dozens of other electronic libraries and broad-based or vertical information services to investigate—as well as hundreds of free BBS's from which you can download software using your modem.

Next time, we'll look at how you can use the computer to stay in touch with colleagues across town or across the country. ☉

Lawrence J. Magid is a nationally syndicated computer columnist.

Prodigy, 800/776-3449
Reader service no. 720

CompuServe Information Service,
800/848-8199
Reader service no. 645

Dialog Information Service,
800/334-2564
Reader service no. 721

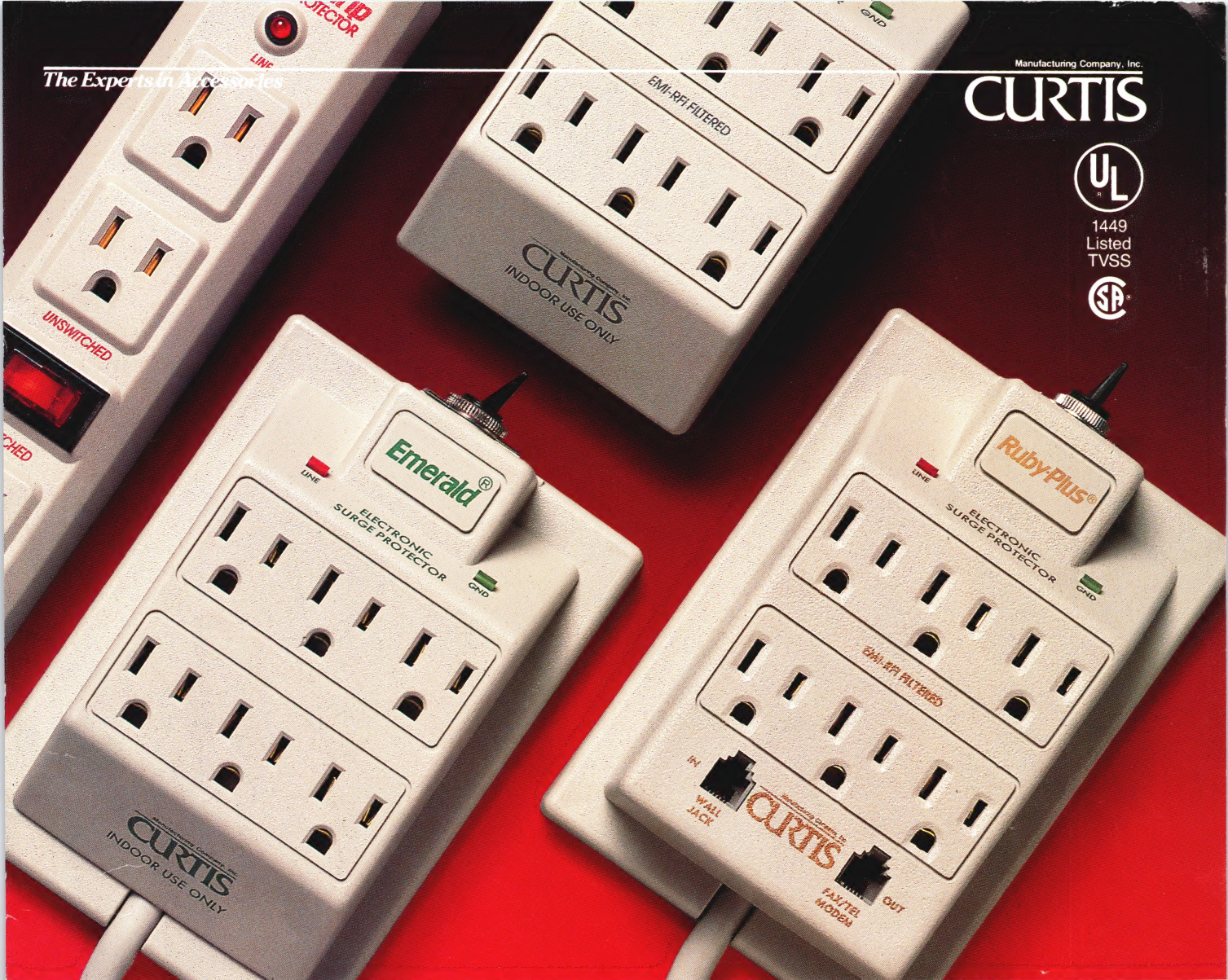
The Experts in Accessories

Manufacturing Company, Inc.

CURTIS



1449
Listed
TVSS



You Can't Buy A Better Surge Protector Than Curtis

Guaranteed Protection—Proven Performance

When it comes to protecting their valuable data and electronic equipment, more computer users rely on Curtis surge suppressors than any other brand. Here's why:

UL 1449 TVSS Lowest Voltage Ratings—
Every Curtis surge protector has achieved a rating of 400 volts peak or less—the lowest ratings available—in tests by Underwriters Laboratories for maximum let-through voltage.

Greater Selection—Single or multiple outlets, switched or unswitched, remote control, EMI-RFI filtering, phone line surge protection—

choose the surge protector with the combination that best suits your needs.

Guaranteed Protection—Every Curtis surge protector is guaranteed to provide you with the protection you need. And most are backed by the industry's best warranty coverage—the Curtis Lifetime Warranty.

With all this going for them, no wonder Curtis surge protectors are owned by more computer users than any other brand.

Curtis. You can't buy a better surge protector.



For the Curtis dealer nearest you call (603) 532-4123 Ext. 99

Manufacturing Company, Inc.

CURTIS

30 Fitzgerald Drive, Jaffrey, NH 03452

© Curtis Manufacturing Company, Inc.

An **Insilco** Company

Dell™ PC wins the 1st PC Week Corporate Satisfaction Poll.



286 Systems, October 17, 1988

Dell PC wins the 2nd PC Week Corporate Satisfaction Poll.



386™ Systems, October 24, 1988

Dell PC wins the 3rd PC Week Corporate Satisfaction Poll.



386 Systems, April 10, 1989

Dell PC wins the 4th PC Week Corporate Satisfaction Poll.



286 Systems, April 17, 1989

Dell PC wins the 5th PC Week Corporate Satisfaction Poll.



386 Systems, February 5, 1990

Dell PC wins the 6th PC Week Corporate Satisfaction Poll.



386SX Systems, February 12, 1990

Dell PC wins the 7th PC Week Corporate Satisfaction Poll.



386SX Laptops, July 16, 1990

Dell PC wins an unprecedented 8th PC Week Corporate Satisfaction Poll.



386 LAN Servers, July 30, 1990

MAYBE IT'S TIME TO CALL GUINNESS.

Announcing a new world record.

We're the only company that's won the prestigious PC Week Customer Satisfaction Poll for personal computers eight times. Why?

It's simple. Dell has extremely satisfied

customers. In fact, some of them border on being fanatical. Our customers described our computers service and support with terms like "Flawless," "Superb" and "Absolutely the Best."

Call us today and see what it's like to work

with an award winning computer company.

We could always use another vote.

TO ORDER, CALL NOW:

800-289-1210

IN CANADA, CALL 800-387-5752



To see the next generation of award winners, see our brand new line of computers starting on page 57

Dell is a trademark of Dell Computer Corporation. 386 is a trademark of Intel Corporation. Dell cannot be responsible for errors in typography. Dell disclaims any proprietary interest in trademarks or trade names other than its own. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. ©1990 Dell Computer Corporation. All rights reserved.

AD CODE 11DK0

Circle 74 on reader service card